This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

600037949

75 C. 15.

E. BIBL. RADCL.

16
A. 5 2 C ~~100.13~~

19192 e. 285/4

APPENDIX

TO

THE GENERAL REPORT

OF THE

AGRICULTURAL STATE, AND POLITICAL
CIRCUMSTANCES,

OF

SCOTLAND.

600037949

Z 5 G. 15.

E. BIBL. RADCL.

16
A. 2
5 C ~~100.13~~

19192 e. 285/4

Page
District IV.—*The Central Division* - - - - 31
1. *Fife* - - - - - - - - - *ib.*
2. *Kinross-shire* - - - - - - - - 32
3. *Clackmannanshire* - - - - - - 33
4. *Stirlingshire* - - - - - - - 34
5. *Perthshire* - - - - - - - - 35
6. *Angus, or Forfarshire* - - - - - - 37
District V.—*North-East Lowlands* - - - - 39
1. *Kincardine, or the Mearns* - - - - *ib.*
2. *Aberdeenshire* - - - - - - - - 40
3. *Banffshire* - - - - - - - - 43
4. *Elginshire* - - - - - - - - 44
5. *Nairnshire* - - - - - - - - 45
District VI.—*The West Highlands* - - - - - 47
1. *Argyleshire* - - - - - - - - *ib.*
2. *Inverness-shire* - - - - - - - 48
District VII.—*The North Highlands* - - - - 50
1. *Cromarty* - - - - - - - - *ib.*
2. *Ross* - - - - - - - - - 51
3. *Sutherland* - - - - - - - - 52
4. *Caithness* - - - - - - - - 53
District VIII.—*The Ebudes, Hebrides, or Western Islands* 54
District IX.—*The Northern Islands* - - - - 58
1. *The Orkney Islands* - - - - - - - *ib.*
2. *The Zetland, or Shetland Islands* - - - 61
General View of the Nine Agricultural Districts of Scotland 65

No. IV. Branch I.—*Antient territorial Districts and natural Subdivisions of the Mainland of Scotland* - 66
District I.—viz. *Berwick Bounds, Tiviotdale, the Merse, Lammermuir, Lauderdale, Lothian, Galla-Water, Kerse, or Carse of Falkirk* - - - 66—68
District II.—viz. *Tweeddale, The Forest, Eskdale, Annandale, Nithsdale, Galloway, The Machers, The Rinns of Galloway* - - - - - - - 68—70
District III.—viz. *Carrick, Kyle, Cunningham, Strathgreif, Clydesdale, Douglasdale, Lennox, Arrochar* 70, 71
District IV.—viz. *Enrick-Water, Buchanan, Monteith, Strathallan, Strathearn, Breadalbane, Glenfalloch, Strathfillan, Glen-Dochart, Glen-Lochy, Glen-Lyon, Rannoch, Atholl, Strath-Tummel, Strath-Tay, Strath-Garry, Glen-Erochkie, Glenbruar, Glentilt, Strath-brand, Glenalmond, Perth Proper, Stormont, Strathardle, Glenshee, Gowrie, Strathmore, Angus* - 71—77
District V.—viz. *The Mearns, Mar, Formartin and Belhelvie, The Garioch, Strathbogie, Buchan, The Boyne,*

Page

The Enzie, Auchindoun, Strathaven and Balveny, Moray, Ferintosh - - - - - - 78—81

District VI.—viz. *Kintyre, Knapdale, Argyle Proper, Cowal, Lorn, Glenurchy and Glenetive, Glenco, Muckearn, Beneideraloch, Appin, Morven, Ardnamurchan, Sunart, Ardgowar, Mamore, Lochiel, Badenoch, Strathspey, Strathearn, Strathnairn, Stratherrick, Lochaber, Glenmore, Glengary, Glen-Moriston, Glen-Urquhart, The Aird, Strathglass, Moydart, Arasaig, Morrer, Knoydart, Glenelg* - - - - - - 81—88

District VII.—viz. *The Black-Isle, &c. Ferindonald, Glenshiel, Kintail, Lochalsh, Loch Carron, Applecross, Gareloch, Groynard, Coygach, Assint, Edderachylis, Ashir, Strathnaver* - - - - - - 89—92

Branch II.—*The Hebrides, or Ebudes,* viz. *The Cumbraes, The Isle of Bute, Arran.—The principal islands belonging to Argyleshire,* viz. *Gigha, Isla, Colonsay, Jura, Islands of Lorn, Mull, I-Colm-Kill, Staffa, Tyree, Coll, Lismore, Muick, Rum, Canna.—Islands belonging to Inverness-shire,* viz. *Eig, Skye, Raaza.—Long Island, with the different groups into which it is disposed,* viz. *Barra, South Uist, Benbecula, North Uist, Harris.—Lewis, and the following, belonging to Ross-shire,* viz. *St Kilda, Rona, Flannen Islands* - 92—109

Branch III.—*The Northern Isles* - - - - - 110

1. *The Orkney Islands,* viz.—*Stroma, South Ronaldsa, Flota, Hoy, Graemsa, Burra, Copinsha, Pomona, Shapinsha, Weir* or *Wire, Enhallow, Rowsa, Eaglisha, Stronsa, Eda, Westra, Papa Westra, Sanda, North Ronaldsa, Swina* or *Swanna, The Pentland Skerries* - - - - - - - - - 111—116

2. *The Islands of Zetland,* viz.—*The Fair Isle, Fula, Fowla* or the *Foul Isle, The Mainland, Vallay, Burra, Bressay, Whalesa, The Out Skerries, Papa* or *Papa Stour, Rooe, Yell, Fetlar, Unst* - 116—120

No. V.—*Additional particulars regarding the Climate of Scotland. By the Rev. Dr Graham of Aberfoyle* - 121

I. *Details of the Climate in the several Counties of Scotland* - - - - - - - - - *ib.*

1. *The West Coast of Scotland, from the South* 122

2. *The Middle Zone, including the Midland Counties* 125

3. *The Climate of the Eastern Coast of Scotland* 127

II. *Table of the Elevation of various places in Scotland above the Level of the Sea* - - - - - - 128

III. *Results of Meteorological Tables relating to Scotland* 131

1. *Of the Barometer* - - - - - *ib.*

Page
2. *Of the Thermometer* 132
3. *Rain* 134
4. *Winds* 140
5. *Electrical Phenomena* 142
6. *Of the effects of Climate on Animals and Vegetables* 144
IV. *Of the Periods of Sowing and Reaping* 146
1. *The Southern Region* 147
2. *Middle Region* 148
3. *Northern Region* 149
4. *The Hebrides* 150
5. *The Orkney and Shetland Isles* *ib.*
V. *Remarks on the ancient State of the Climate of Scotland* *ib.*

No. VI.—*Additional Particulars regarding the Minerals and Fossils of Scotland. By Mr George Robertson* 154
1. *Of the more valuable Minerals* *ib.*
2. *Of the Scarcer Minerals* 156
3. *Precious Stones and Gems* 157

No. VII.—*On the Waters of Scotland. By Mr George Robertson* 160
I. *Rivers*, viz.—*The Tweed, Tyne, Esk North* and *South, Leith, Almond, Avon, Carron, Forth, Leven, Eden, Tay, South Esk, North Esk, Dee, Don, Ithan, Ugie, Deveron, Spey, Lossie, Findhorn, Nairn, Ness, Beauly, Conan, Carron, Oikel, Brora, Helmsdale, Wick, Thurso, Forss, Halladale, Strathy, Naver, Water of Ew, Carron, Lochy, Leven, Awe, Clyde, Leven* (anciently *Levenox*), *Garnock, Irvine, Ayr, Doon, Girvan, Stinchar, Bladenach, Cree, Dee, Orr* or *Urr, Nith, Annan, Esk* 160—168
II. *Fresh Water Lakes* 168
In District 1st—*none.*
In District 2d.—*St Mary's Loch,* and *Loch of Lows, Loch Skene, Loch Ken* and *Loch Dee, Loch Grannoch* 168—169
In District 3d.—*Loch Doon, Loch Whinnoch, Loch Lomond* 169
In District 4th.—*Camilla Loch, Loch Gellie, Loch Ore, Loch Fitty, Loch Leven, Loch Tay, Loch Rannoch, Lochearn, Erricht, Loch Catterin, Chon, Ard, Achray, Venachar, Voil, Lubnaig, Loch of Menteith, Lydoch, Tumel, Turret, Garrie, Dochart, Lyon, Loch of Lows,* 170—173
In District 5th.—*Loch Muick, Loch-na-youn, Strathbeg, Loch-le-nean, Loch of Spynie* 173
In District 6th.—*Loch Awe, Loch Avich, Loch Eck,*

Page
Loch Nell, Loch Ness, Loch Lochy, Loch Oich, Loch Laggon, Loch Treig, Loch Garry, Affrick or *Affarig, Arkeig, Loch Shiel, Loch Morrer, Loch Insch, Loch Moy* - - - - - - - - 173—175
In District 7th.—*Shinaskink, Baddagyle, Lurgan, Loch Mari, Fannich, Fuir, Luichart, Clash* or *Glass, Loch Shin, Naver, Loch Loyal, Watten, Calder* 175—176
In Districts 8th & 9th.—*A variety of lakes—the largest, Loch of Stennis* - - - - - - - 176
III. *Of Friths and Inlets of the Sea,* viz.—*The Frith of Forth, Frith of Tay, Murray Frith, Frith of Beauly, Frith of Cromarty, Frith of Dornoch, Thurso* and *Dunnet Bays, Kyle of Tongue, Loch Eribol, Bay of Durness, Loch Inchard, Loch Laxford, Loch Assint, Loch Enard, Loch Broom, Loch Ew, Gairloch, Loch Torridon, Loch Carron, Lochalsh* and *Loch Duich, Loch Hourn, Loch Nevish, Loch Aylort, Loch Moydart, Loch Sunart, Linnhe Loch* and *Lochiel, Loch Leven, Loch Creran, Loch Etive, Loch Melfort, Craignish, Loch Swain, Loch Killisport, Loch Tarbat, The Frith of Clyde, Lochfine, Loch Long, Loch Gare, Loch Striven, Loch Ryan, Bay of Glenluce, Wigton Bay, Kirkcudbright Bay, Bay of Nith, Solway Frith* - - - 177—183
IV. *Mineral Waters,* viz.—*Hartfell Spa, Pitcaithly, Pannanich, Peterhead* - - - - - 184—185

CHAPTER II.

No. I.—*Observations on the State of Land-rights in Scotland. By Robert Bell, Esq. Advocate* - - - 186
Sect. I.—*Of the State of Landed Property in Scotland—the Tenures under which it is held—and the Title-deeds by which it is originally given out* - - - - - 187
Sect. II.—*Of the Power and Means of Disposal of Landed Property by Sale, if not held under the Fetters of an Entail* - - - - - - - - - - 198
Sect. III.—*Of the Power of Disposal of Landed Property in Scotland by Settlement* - - - - - - 206
Sect. IV.—*Of Land as a Security for Debt* - - 211
Of the Voluntary Security - - - *ib.*
Sect. V.—*Of Leasehold Property* - - - - - 216
1. *Of Leasehold Property in Relation to Agriculture* 217
2. *Of the Lease as a Title to Land* - - - 221
Sect. VI.—*Of the Provision for the Clergy, and the Support of the Poor* - - - - - - - 222

Page
1. *Of the Provision for the Clergy* - - - 222
2. *Of the Manner of Supporting the Poor* - 225
Sect. VII.—*Of Land as a Means of Political Influence* 227
Conclusion - - - - - - - - 228

No. II.—*On the State of Landed Property in Scotland. By the Rev. Charles Findlater, Newlands* - - - 229
1. *On the various Modes of Holding Possession of Property in Land, as affecting Agriculture* - - - *ib.*
2. *Of Holding of Land upon temporary Tenure.—Of Lease, as Alienable, or Personal,—under Restriction, or Free Management.—Burdens* - - - - - 237

CHAPTER III.

No. I.—*Of the Materials employed in Forming the Walls of Agricultural Buildings, in the various Districts of Scotland. By Mr Crichton, Architect, Edinburgh* 257

No. II.—*Materials for covering Roofs* - - - - 262

No. III.—*Of Floors formed of Clay, Composition, Stone, Brick, and Wood* - - - - - - 268

No. IV.—*On the Situation and Construction of Cottages* - 271

No. V.—*Specification and Estimates for Cottages, such as are usually erected in East Lothian, and the other Arable Districts in Scotland* - - - - - - 273

No. VI.—*Of arched Roofs for Agricultural Buildings* - 274

No. VII.—*On improved Plans of Cottages* - - - 276
Explanation of Plan for a Farm-House and Offices, adapted to a Farm of 500 *Acres of Arable Land. By Mr Burn, Architect, Haddington* - - - 277
Description and Estimate of the Cottages with Paper Roofs - - - - - - - - 279

No. VIII.—*Description of the Smaller Sorts of Farm-houses and Offices in Scotland. By the Rev. Dr Skene Keith* 280

No. IX.—*Of the Means of Improving Water for the Use of Farmers and Cottagers* - - - - - 285

No. X.—*Of the Expense of Building a Farm-House and Offices, according to the most approved Plans in the Arable Districts of Scotland* - - - - - - 286
1. *Specification of a Farm-House* - - - *ib.*
2. *Specification and Estimates of the Farm-Offices* 289

No. XI.—*Additional Hints regarding the Construction of Farm-houses and Offices. By Mr Richard Crichton, Architect, Edinburgh* - - - - - - - - 291

CHAPTER IV.

Page
No. I.—*On the relative Advantages of Great and Small Farms. By the Rev. Dr George Skene Keith* - - - - 295
No. II.—*A more particular Account of the Character of the Farmers in the different Counties of Scotland. By the Rev. Dr George Skene Keith* - - - - - 300
No. III.—*Observations on Leases. By Mr Walter Thom* - 309
Elucidations of the Nature of the Leasehold Tenure - 312
No. IV.—*On Tithes and Poor Rates, in so far as they are applicable to Scotland. By the Rev. Dr George Skene Keith* 319
  1. *Tithes* - - - - - - - - *ib.*
  2. *Poor's Rates* - - - - - - - 321
No. V.—*On Covenants. By Sir John Sinclair* - - 324
Lease of a Farm, adapted to the Conditions above expressed. Recommended by Sir John Sinclair - 328
No. VI.—1. *On the Expenses and Profit of Farming* - 335
  2. *Expense of Cultivating Arable Land in Scotland. By Mr Hope of Fenton, in East Lothian* - 337
No. VII.—*On the Capital necessary for carrying on Farming Operations. By Sir John Sinclair* - - - 343

CHAPTER V.

No. I. *General Observations on Implements of Husbandry; and an Account of the Principal Ones formerly made use of in Scotland* - - - - - - - - - 348
  Plough made use of in the Hebrides - - - 350
  The Ristle, or Sickle Plough - - - - - *ib.*
  The Cascrom - - - - - - - - - 351
  Harrows - - - - - - - - - *ib.*
  Carts - - - - - - - - - - *ib.*
No. II.—*Account of James Small; and of his Improvements in making Instruments of Husbandry. By Sir John Sinclair* - - - - - - - - - - 352
  Description of Small's Plough - - - - 358
No. III.—*On the Improved Cart* - - - - - - 359

CHAPTER VI.

On the Size and Shape of Fields. From Sir John Sinclair's Husbandry of Scotland - - - - 361

CHAPTER VII.

Page

No. I. *Tables of the Produce of Grain, &c. By J. F. Erskine Esq. of Mar* - - - - - - 370—378

No. II. *Remarks on the Utility of raising Corn Stacks on Pillars three Feet high, with a proper Kill-logie or hollow space in the centre of the Stack. By James Brownhill, Overseer at Shaw Park* - - - - - - 379

No. III. *Account of the Weight of two Wheat Stacks, Crop* 1811, *one placed on Iron Pillars three feet high, the other built on the Ground. By James Brownhill* - - 382

No. IV. *Remarks on Ploughing Ley. By James Brownhill* 383

No. V. *Extraordinary crop of Wheat,* 1806 - - - 384
Particulars - - - - - - - - *ib.*

CHAPTER VIII.

No. I. *Plants in the Natural Meadows of Scotland* - - 385
Grasses - - - - - - - - - - *ib.*
Weeds in Meadows - - - - - - - 389

No. II. *On the Nature of Old Turf. By John Naismith Esq.* - - - - - - - - - - - - 391

No. III. *The Question respecting the Utility of keeping Land in Old Turf, or Permanent Pasture, illustrated and discussed. Extracted from Sir John Sinclair's Husbandry of Scotland* - - - - - - - - 397

No. IV. *Account of the breaking up of Haughs of Hamilton. By Mr William Aiton, Strathaven* - - - - - 409

No. V. *On breaking up Old Turf for Tillage. By the late Mr Robert Kerr* - - - - - - - - - 413
Additional Information regarding Hamilton Haugh, and the breaking up of other Old Pastures in that Neighbourhood. By Mr Wm. Aiton - - - 418

CHAPTER IX.

Art. (A.) *Report to the Highland Society respecting Early Potatoes. By Dr Duncan jun. and Mr P. Neill* - 419

Art. (B.) *Notices concerning the Taste for Flowers prevalent among the Operative Manufacturers at Paisley; with an Account of the Florist Society instituted there* - - 422
Florists' Society - - - - - - - - 423

Page

Art. (C.) *Directions for the Culture of Cottage Gardens, by the late Mr Nicol. From a MS. in the Possession of the Right Hon. Sir John Sinclair, Baronet* - - 426
Summer Cabbage - - - - - - - *ib.*
Winter Kail
Early Potatoes
Early Turnip - - - - - - - 427
Beans
Leeks
Onions - - - - - - - - 428
Clover, with Lint or Barley - - - - - *ib.*

Art. (D.) *Observations on the Cottage Gardens in the Carse of Gowrie. By Mr Archibald Gorrie* - - - - *ib.*

Art. (E.) *List of Table Apples, Pears, and other Tree Fruits, for use in succession from July to July again, as generally furnished from his Grace the Duke of Buccleuch's Garden at Dalkeith. Communicated by Mr Macdonald* - - - - - - - - 433

Art. (F.) *List of the different Varieties of Fruits, chiefly cultivated in Scotland* - - - - - - - 435
1. *Apples—Early Apples* - - - - - - *ib.*
Late Apples - - - - - - 438
2. *Pears—Early Pears* - - - - - - 440
Autumn Pears - - - - - - 441
Late Pears - - - - - - 442
3. *Plums—Early Plums* - - - - - - 443
Later Plums - - - - - - 444
4. *Cherries* - - - - - - - - 445
5. *Apricots* - - - - - - - - 446
6. *Peaches* - - - - - - - - *ib.*
7. *Nectarines* - - - - - - - - 447
8. *Figs*
9. *Grapes*
10. *Gooseberries* - - - - - - - - 448
11. *Currants*
12. *Raspberries*

Art. (G.) *On the Cultivation of Currants. By Mr James Smith, Ormiston Hall* - - - - - - - 449
Black Currant - - - - - - - - 450
The Dutch White, and the Red Currant - - *ib.*

Art. (H.) *Observations on the Improvement of Hot-Houses, &c. By John Henderson, Nurseryman, Brechin* - 452
Double Trellis Frame - - - - - - - 452
Triple Meridian Hot-house - - - - - - 453
Furnaces - - - - - - - - - *ib.*

Pag

Art. (I.) *Table, illustrative of the Clydesdale Orchards, showing the Number of Acres, either of Arable Land, or of Steep Banks contained in them, and the Prices at which the Crops were sold in different years, from* 1808 *to* 1812. *From the Communications of Mr Paterson junior* - 454

Art. (K.) *List of the principal sorts of Apples, Pears and Plums, cultivated in Clydesdale. Communicated by Mr Paterson junior* - - - - - - - - - *ib.*
- 1. *Apples* - - - - - - - - - - *ib.*
- 2. *Pears* - - - - - - - - 456
- 3. *Plums* - - - - - - - - - *ib.*

Art. (L.) *Table, illustrative of the Carse of Gowrie Orchards, showing their Extent, the general Character of their Soil, and the Prices which the Fruit brought annually, from* 1809 *to* 1813, *where these could be ascertained. Communicated by Messrs Machray and Gorrie* - - 457

Art. (M.) *List of the principal Sorts of Apples, Pears and Plums, cultivated in the Carse of Gowrie. Communicated by Messrs Machray and Gorrie* - - - - 457
- *Orchard Apples* - - - - - - - - *ib.*
- *Orchard Pears* - - - - - - - - 459

Art. (N.) *Information regarding the Carlisle and Keswick Codlin Apples. Extracted from various Communications on that subject, addresssd to Sir John Sinclair* - - 460

Art. (O.) *Notice concerning the Caledonian Horticultural Society* - - - - - - - - - - 462

Explanation of the Plates connected with Chap. IX. 463

CHAPTER X.

No. I. *Of the ancient State of the Woods and Forests of Scotland* - - - - - - - - - - 465

No. II. *Remarks on Pruning Forest Trees. By Arthur Young Esq. in a MS. Communication to Sir John Sinclair* - - - - - - - - - - 467

No. III. *Description of the Pruning Chisel, used at Lord Gray's in Perthshire, and at Mr Muir's of Caldwell, in Ayrshire* - - - - - - - - - - 468

No. IV. *Letter from William Adam Esq. to Sir John Sinclair, Bart. President of the Board of Agriculture, respecting the Plantations and other Improvements of the Estate of Blair, in the County of Kinross* - - - 470

Page

No. V. *The Annual Increase of the Trees at The Burn, the Estate of Alexander Brodie Esq. in Kincardineshire, for a period of eight years, measured 27th October yearly* 481

No. VI. *An accurate Measurement of* 13 *Timber Trees in the Lawn of Callander, communicated by William Forbes Esq. the Proprietor* - - - - - - - 482

No. VII. *An Account of some of the most remarkable Trees in Scotland* - - - - - - - - - - 484
The Oak - - - - - - - - - *ib.*
The Larch - - - - - - - - 485
The Ash - - - - - - - - - 486
The Elm - - - - - - - - - 487
The Beech - - - - - - - - 488
The Scotch Fir - - - - - - - *ib.*
The Silver Fir - - - - - - - 489
The Plane or Sycamore - - - - - *ib.*
The Chesnut - - - - - - - - *ib.*
Black Poplar - - - - - - - - 490
The Yew - - - - - - - - - *ib.*
The Alder - - - - - - - - - 491
Periods of Planting other exotic Forest Trees in Scotland - - - - - - - - - *ib.*

No. VIII. *Laws regarding Planting* - - - - - 492
Scotch Acts - - - - - - - - *ib.*
British Statutes - - - - - - - 493
Statutory Presumption - - - - - - 497

No. IX. *Observations on the Larch. Transmitted to the Commissioners of Naval Revision in May* 1807. *By the Duke of Atholl* - - - - - - - - - 498
Trials of Larch - - - - - - - - *ib.*

No. X. *On Tanning with the Bark of Larch. By Thomas White Esq.* - - - - - - - - - 501

No. XI. *Communication on the best Mode of Planting Trees, and other interesting Subjects. By A. P. Hove Esq., a native of Poland: Addressed to the Right Hon. Sir John Sinclair, Baronet, President of the Board of Agriculture* 503

APPENDIX
TO THE
GENERAL REPORT,
OF
THE AGRICULTURAL STATE, AND POLITICAL CIRCUMSTANCES,
OF
SCOTLAND.

CHAPTER I.

No. I.

I. POLITICAL DIVISIONS.

It is proposed, in this Number of the Appendix, to give some additional particulars, regarding the Political Divisions of Scotland, as there are several others, besides those already enumerated in Chapter I., which may, without impropriety, be included under the head *Political*, namely, those, 1. of a Legal—2. of a Military—and, 3. of a Financial nature. There are also some divisions of a miscellaneous description, which may be alluded to under this head.

Legal Divisions.

This branch may be subdivided into two heads. 1. Of the respective sheriffdoms, for the general administration of justice, the Judges of which are stationary, or resident in their respective districts. 2. Of the Justiciary Courts, for the more effectual suppression of crimes, and for the decision also of some civil causes, the Judges of which are ambulatory, and make their circuits at particular periods.

Sheriffdoms.

These, although generally defined by counties, are not necessarily limited to one, there being some instances in which one sheriffdom extends over two counties. Each of the Sheriffs-depute have at least one Substitute, who resides constantly, and gives judgment in all causes that come before him; but his decision is liable to review by the Sheriff-depute, and the Superior Courts. Several of them have two or more substitutes, where the counties are extensive and populous, or much detached one place from another. In the following Table is inserted, 1. The counties composing Sheriffdoms; 2. The number of Sheriffs-depute; 3. Their salaries; 4. Number of Substitutes; 5. Square miles of territory; and, 6. Number of people under the respective jurisdictions.

Table of Sheriffdoms.

COUNTIES. I.	II.	III.	IV.	V.	VI.
Aberdeen	1	400	1	1970	135,075
Argyle	1	400	3	3210	85,585
Ayr	1	400	1	1045	103,954
Banff	1	300	1	647	36,662
Berwick	1	300	1	442	80,779
Bute	1	300	2	165	12,033
Caithness	1	300	1	697	23,419
Clackmannan & Kinross	1	350	2	127	12,016
Dumfries	1	350	1	1263	69,960
Dunbarton	1	300	1	259	24,189
Edinburgh	1	600	1	354	148,607
Elgin and Nairn	1	300	2	678	36,359
Fife	1	400	1	467	101,272
Forfar	1	400	1	892	107,264
Haddington	1	300	1	272	31,164
Inverness	1	400	2	4245	78,336
Kincardine	1	300	1	382	27,439
Kirkcudbright	1	300	1	834	33,684
Lanark	1	500	3	945	191,752
Linlithgow	1	300	1	120	19,451
Orkney and Zetland	1	350	2	1320	46,153
Peebles	1	300	1	319	9,935
Perth	1	400	2	2638	135,093
Renfrew	1	350	1	227	92,596
Ross and Cromarty	1	400	3	2975	60,833
Roxburgh	1	300	1	715	37,230
Selkirk	1	300	1	265	5,889
Stirling	1	350	1	502	58,174
Sutherland	1	350	1	1801	23,629
Wigton	1	300	1	459	26,891
33 Total	30	10,600	42	30,238	1,805,688

Besides the sheriffdoms of counties, which, in a larger sense, include all the towns or cities within them, there are some instances, of the power of a Sheriff, being vested in the Magistracy of some of the larger towns, such as in the city of Edinburgh. But unless it be, in determining civil causes between citizen and citizen, in petty thefts, and in matters of the police, it is rare that the Magistracy of any town, exercise the high authorities of a Sheriff, in criminal trials.

The Justiciary Circuit Courts.

The Supreme Court of Session, and the High Court of Justiciary, sit at Edinburgh, as permanent seats of civil and criminal justice, to which all Scotland is amenable; but to facilitate the distribution of justice in the more remote parts, there are three Circuit Courts of Justiciary, which go twice in the year, namely, in the spring and autumn, during the vacation of the Supreme Civil Court of Session, of which the Lords of Justiciary are also members.

1. The South Circuit, which sits at Jedburgh, Dumfries, and Ayr.
2. The West Circuit, which sits at Stirling, Glasgow, and Inverary.
3. The North Circuit, which sits at Perth, Aberdeen, and Inverness.

Two Judges are named to each Circuit; but one can do the duty.

The criminals from the counties of Berwick, Roxburgh, Selkirk, and Peebles, are tried at Jedburgh.

The criminals from the counties of Dumfries and Kirkcudbright, are tried at Dumfries.

The criminals from the counties of Wigton and Ayr, are tried at Ayr.

The criminals from the counties of Lanark, Renfrew, and Dunbarton, at Glasgow:—From Argyll and Bute shires, at Inverary:—And from the counties of Stirling, Linlithgow, Kinross, and Clackmannan, at Stirling.

The criminals from the counties of Perth, Angus, and Fife, at Perth:—From Kincardine, Aberdeen, and Banff shires, at Aberdeen:—And from Elgin, Nairn, Inverness, and the other northern counties, at Inverness.

The criminals from the counties of Haddington and Edinburgh, being in the immediate vicinity of the Supreme Court, are tried at Edinburgh.

The Justiciary Lords, while on the respective Circuits, judge likewise in civil causes, in cases of appeal from the inferior courts.

2. *Military Divisions.*

The country is at present divided into Military Departments, under the respective Generals, subject to a Commander in Chief. But these arrangements depend so much on contingent circumstances, and exigencies that alter from time to time, as must render it unnecessary to dwell at any length upon the subject. It is only proper to observe, that there is in every county a Lord-Lieutenant, acting under his Majesty, to direct the internal operation of the Defence act, and to enforce the regulations respecting the militia, both general and local. This is a new feature in the policy of Scotland, adopted from England; as, excepting in very peculiar cases, Lord-Lieutenants were but rarely appointed, till the militia was established in Scotland.

3. *Financial Divisions.*

These relate either to the Customs or to the Excise.

In regard to the former, it may be proper to give the Land-limits of each of the ports in Scotland, where a Customhouse is established, with references to the limits on the map.

(A) *Dunbar.*—From the water or river Tyne, in East Lothian, inclusive, on the north, to the place called the Bound Road on the south.

(B) *Prestonpans.*—From the burn called Frigote-burn on the west, to the river Tyne on the east.

(C) *Leith.*—From the Frigote-burn on the east, to Cramond water on the west.

(D) *Borrowstounness.*—From the west side of Cramond water, on the south side of the Forth, to the east side of the Forth; and from the east side of the Newpans of Kincardine to Donney Point, on the north side of the Firth of Forth, near Aberdour.

(E) *Grangemouth.*—From the east side of Avon water, along the shore on the south side of the Firth of Forth, to the east side of the Newmill burn, or Pow of Higgin's Nook, and along the Forth and Clyde Canal, from the eastern extremity thereof, to Auchensterry drawbridge, near Kilsyth.

(F) *Alloa.*—From the east side of the Newmill burn, or Pow of Higgin's Nook, alongst the shore on the south side of the Forth, to the bridge of Stirling westward, and thence alongst the north side of the said river, to the east side of the Newpans of Kincardine.

(G) *Kirkaldy.*—From Donneypoint, lying upon the Firth of Forth, near the house of Donneybrisal, along the coast of Fife, north-eastward to Kingcraigness, or Point, near Largo.

(H) *Anstruther.*—From Kingcraigness, or Point, towards the west, to the mouth of the river Eden towards the north.

(I) *Perth.*—From the north pier of Perth directly south-east, to the farthest part of the Pow of Lindores, on the south side of the river Tay, being about seven miles from the town of Perth; and from the north side of the river Tay, overagainst the town of Perth, to the farthest part of the Pow called Pow Gavie, about eight miles from the town of Perth.

(K) *Dundee.*—From the mouth of the river Eden alongst the coast, to the mouth of the river Tay, and from thence directly over to the lighthouse, on the north side of the river; and from thence, including the said river, to Pow-Gavie, on the north side, and the Pow of Lindores, on the south side of the river.

(L) *Montrose.*—From the lighthouse of Tay on the south, bordering with Dundee, to a place called the Tod-head on the north side of Montrose.

(M) *Aberdeen* (*including Banff.*)—From Tod-head on the south, to the north part of the harbour of Cullen on the north.

(N) *Inverness.*—From a place called Port Nockie, next adjoining to the town of Cullen on the Murray Firth, in a direct line across the said Firth, to the north part of a place called Helmsdale on the coast of Sutherland.

(O) *Thurso.*—From Helmsdale on the south, along the coast, (including the Isle of Stroma), and along the east, north and west coasts, to Lochbroom in the West Highlands.

(P) *Kirkwall.*—From the Pentland Skerries, round all the Orkney Islands, and back to the Pentland Skerries.

(Q) *Lerwick.*—Comprehends all the Shetland Islands, together with the Fair Isle, and the Isle of Foula.

(R) *Stornoway.*—The whole of the island of Lewis, including the countries called Lewis and Harris, with the small islands belonging or adjoining thereto; also, the islands of North Uist, Benbecula, South Uist, Erisea, and Barra, with the small islands belonging to them, which are all included under the general name of the Long Island; together with the islands of St Kilda, Salisker, and Rona.

(S) *Tobermory.*—Comprehends the islands included in a supposed line, extending from Castle Douart round the south end of the Island of Mull to the rock called Skirrie Vore, from thence to Duskere, near Tiree, from thence to Hells-Ker near Cana; from Cana to Duncan Point, on the Isle of Skye; from said Point along the coast of that island to the Point of Mull; from thence to the Point of Arasaig on the Mainland; and along the coast of the Mainland, from Arasaig to Loch Moydart; from thence to the head of Loch Sunart; from thence to Ardenridder; and from thence to Castle Duart on the island of Mull.

(T) *Fort-William.*—Extends in a line from Fort-William, south on the Mainland to Portnacross, opposite to the Castle of Ellenstaker; thence west to the Point of Ardenridder; thence north-east to the head of Loch Sunart; thence north-west to the Point of Arasaig, and north and north-west to the Isle of Fladaluna, including the Island of Skye, and the adjacent Islands; thence to the head of Loch Broom; and thence to Fort-William.

(V) *Oban.*—From Oban southward along the coast to the Point of Bennar; thence round the south and west of Searba; thence round Lismore, and back to Oban.

(W) *Campbeltown.*—From the Point of Barmore on Lochfine, through the Sound of Kilbrannan, round the Mull of Kintyre; comprehending also the islands of Isla, Jura, Colonsay, Oronsay, and Gigha, to the Bennan Point; and thence to the Point of Barmore.

(X) *Rothesay.*—Comprehends the whole county of Bute, viz. the islands of Bute, Arran, Great and Little Combraes.

(Y) *Glasgow.*—From the New Bridge of Glasgow westward along the south side of the river Clyde, to a place called Blantyre; from thence across the said river, to the eastermost part of the Quay of Dunglas; and thence eastward, along the north side of the river to the New Bridge of Glasgow; and up the Forth and Clyde Canal to Auchentlerrie Drawbridge, near Kilsyth.

(Z) *Port-Glasgow.*—From Blantyre on the south side of the Clyde to Garvel Point, and across the river, to the Hill of Ardmore; thence east to the Quay of Dunglas (inclusive); also the whole of Lochfine, and the entrance thereof, and from the Point called Ardlamond, on the east side of the entry of Lochfine, alongst the coast; extending from thence opposite to the north-west and north-east part of the Island of Bute, to the Point of Toward.

(A a) *Greenock.*—From a Point called Gravel Point, between Port-Glasgow and Greenock, on the east, on the south side of the Clyde, to Largs on the west; and from thence directly across the said river to the Point of Toward, on the north side of the said river; and from thence to the Point of the Hill of Ardmore on the east, and from thence directly across the said river to the Point called Gravel Point.

(B b) *Irvine.*—From the north-east end of the village of Largs to the Troon Point.

(C c) *Ayr.*—From the Troon Point, to the Sandhouse in Carleton Bay.

(D d) *Stranraer.*—From the town of Stranraer, by the east side of Lochryan, along the shore to Sandhouse in Carleton Bay, and on the west side of the Loch, to the Point of Corsale. From Port Spittle to the Point of the Mull of Galloway; from the said Point, to the bottom of the Bay of Luce, and round the bottom of the Bay, to the Burn of Gillespie on the east side thereof.

(E e) *Port Patrick.*—From Corsale Point to the North, to the Point of Port Spittle to the South.

(F f) *Wigton.*—From the Burn of Gillespie on the west, round to Promontory, called Burrowhead, to the east side of the Water of Fleet.

(G g) *Kirkcudbright.*—From the east side of the Water of Fleet, to the east side of the Water of Orr.

(H h) *Dumfries.*—From the east side of the Water of Orr, to the mouth of the Water of Sark.

CUSTOM-HOUSE,
Edinburgh, Dec. 12, 1812.

As to the Excise, the principal division arises from the distinction between the *Lowland* and the *Highland* distillery, which is not limited by the prevalence of the two languages, the English and the Gaelic, but the quality of the barley and the bear, or bigg, these districts respectively produce; a lower duty being exacted from the Highland distiller, owing to the inferior quality of the grain in the more mountainous districts. That line, together with the extent of the several Excise collections in Scotland, will appear from the map that is annexed.

4. *Miscellaneous Divisions.*

Besides these general and greater divisions, the country is more minutely parcelled out into inferior districts, for the more readily enforcing the Excise laws, and for enabling the Justices of the Peace to determine, with less trouble to themselves, and to the public, the causes that come before them, in the Small-Debt court, and various matters of internal police. It would be tedious to define the limits of these; and it is less necessary, from the circumstance, that they are altered from time to time, as the case may require.

* * *

APPENDIX, No. II.

ECCLESIASTICAL DIVISIONS.

THE Ecclesiastical Division of Scotland is very different from that of counties; 44 parishes are each of them situated in two different counties, and two parishes, viz. Arngask and Logie, are each of them in part of three counties. With the exception of these, and reckoning the above 46 in the county in which the church is situated, Scotland is divided into Synods in the following order:—

1. The Synod of LOTHIAN and TWEEDDALE.—This comprehends the whole Lothians, except one remote parish in Gala-water. It also includes the county of Peebles, or Tweeddale; nine parishes conterminous in Lanarkshire; four in Stirlingshire; and one in the shire of Berwick.
2. MERSE and TIVIOTDALE—comprehends one parish in the shire of Edinburgh, the whole of Selkirkshire, and all Berwickshire and Roxburghshire, except one parish in each.
3. DUMFRIES—comprehends one parish in Roxburghshire, the whole of Dumfries-shire, and 10 parishes in Kircudbrightshire.
4. GALLOWAY—comprehends the remainder of Kirkcudbrightshire, the whole of Wigton, and two parishes in Ayrshire.
5. GLASGOW and AYR.—This extensive and very populous Synod comprehends all Ayrshire, except two parishes; all the shires of Renfrew and Dunbarton; all Lanarkshire, except the nine parishes united to the Lothian Synod, and it includes nine parishes in the county of Stirling.
6. PERTH and STIRLING—comprehends the remainder of Stirlingshire, the whole of Clackmannan, and 65 parishes in Perthshire.

7. FIFE—comprehends one parish in Perthshire, and the whole of Fife and Kinross.
8. ANGUS and MEARNS—comprehends 10 parishes in Perthshire, the whole of the shire of Forfar, and 13 parishes in Kincardineshire.
9. ABERDEEN—comprehends 6 parishes in Kincardineshire; 79 in the county of Aberdeen, and 12 in Banffshire.
10. MORAY—comprehends 5 parishes in Aberdeenshire; the whole of Elgin and Nairn; and 13 parishes in Inverness-shire.
11. ROSS—comprehends one parish in Inverness-shire, and the whole of the eastern side of Ross and Cromarty.
12. SUTHERLAND and CAITHNESS—comprehends these two counties.
13. ARGYLE—comprehends the shire of Bute, and all Argyle, except one parish.
14. GLENELG, or Synod of Lochaber and the Isles—comprehends 6 parishes on the Mainland of Inverness-shire; 7 on the west coast of Ross; and 16 parishes among the Isles.
15. ORKNEY—comprehends the islands of Orkney and Zetland.

The Synods come in place of the Bishops, and have jurisdiction in ecclesiastical questions; in regard to which, there is an appeal from the Presbytery to the Synod, and thence to the General Assembly of the Church of Scotland.

In former times, particularly before the Revolution in 1688, Scotland, with respect to Ecclesiastical Government, was divided into 2 Archbishoprics, and 12 Bishoprics. The Archbishoprics were, 1. St Andrew's 2. Glasgow.

The Bishoprics were,

1. Edinburgh
2. Dunkeld
3. Aberdeen
4. Moray
5. Brechin
6. Dunblane
7. Ross
8. Caithness
9. Orkney
10. Galloway
11. Argyle
12. The Isles.

The country in general was parcelled out among these respective sees, in an arrangement having some regard to contiguity; but not always so; for several parishes were attached to bishoprics, and many to the two archbishoprics, that were very remote from the provinces in which they were locally placed. This still remains the case with the jurisdictions of the different commissariots, which have come in place of these bishoprics, in what is called Consistorial Courts.

At present, the Scots Episcopals have only eight bishoprics, viz.—

1. Edinburgh and Fife
2. Glasgow
3. Aberdeen
4. Moray
5. Ross
6. Dunkeld
7. Brechin
8. Dunblane,

comprehending altogether 76 cures, served by 60 clergymen. The number of their adherents is supposed to be about 19,000; which, including the children, may amount to 28,000 souls.

The Roman Catholics divide Scotland into two districts only, the *Lowland* and the *Highland*, in order chiefly to make a separation between the two languages, the English and the Gaelic. Over each they have a Vicar Apostolic, and a Bishop Coadjutor. In the Low country, they have about 30 officiating priests, and in the Highlands about 18. Number of souls about 27,000.

The Seceders from the Scotch Presbyterian Established Church, divide the country among them thus—

1. The Burgher Associate Synod, lay it out in 10 Presbyteries. They have in all 130 congregations in Scotland, with about 66,000 hearers; to which, adding children, the number of souls will amount to about 100,000.

2. The Anti-Burgher Seceders divide it among 3 Synods, containing 11 Presbyteries.—They have in all 134 congregations in Scotland, with about 60,000 hearers; to which, if the children be added, will make them amount to perhaps 90,000.

3. The Church of Relief divide the country into 6 Presbyteries.—They have 76 congregations, with about 50,000 hearers; which, including their children, may make them amount to about 75,000 souls.

The other Presbyterian Sects, as the Cameronians, &c. may amount to about 14,000.

The Separatists, of various persuasions; as Baptists, Bereans, Glassites, &c. may amount in all to nearly 50,000.

The Methodists, of whom there are supposed to be about 6000 members, or, including children, about 9000 souls, divide the country into *circuits*, 11 in all, served by 18 preachers.

The Friends, or Quakers, are so few in number, that they have only five places of meeting, viz. Glasgow, Hawick, Edinburgh, Aberdeen, and Kinmuck, near Old Meldrum. Their whole number does not exceed 200 souls.

The revival of learning, and both the riches and vices of the Romish clergy, produced the Reformation. The refusal of the Scots Bishops to take the oaths to King William and Queen Mary, occasioned the Presbyterian form of church government to be settled at the Revolution. The sects which have separated from this church, sprung up chiefly from opposition to presentation by patrons, instead of a popular election of the established clergy; and they are thrice more numerous than both the Roman Catholics and Episcopalians.

an unceasing warfare with their equally restless neighbours on the English border. But in the present more auspicious times, their natural activity, and inherent spirit of enterprize, are more happily directed, to an emulation in the arts of peace, the decoration of the country, and the improvement of the soil.

4. *Proportion in Cultivation.*—In the very able survey of this county, by Dr Douglas, it is stated, that two parts in five, or 40 parts in 100, may be in cultivation, and the rest in pasture. From the great additions made to the arable land since that survey was published (fifteen years ago), there is reason to believe, that it will not be too much now to calculate 45 in 100, to be in a productive state, more especially when the aptitude of the soil and the enterprising spirit of the husbandmen, are taken into consideration. This, however, includes the woods and plantations, as well as the arable land.

5. *Crops cultivated.*—The arable part of the county being cultivated in a very superior style, now bears the most luxuriant crops of wheat, barley, oats, beans, &c. as well as artificial grasses, potatoes and turnips. This last root is cultivated to a great extent, in particular for the purpose of fattening the many thousands of sheep which are disposed of, in the winter season, to Morpeth, Edinburgh, and other towns.*

6. *Live Stock.*—The horses are of every description. In the lower or eastern parts of the county, where the land is deep and stiff, and the roads more level, they are generally large, strong, and active; in the higher parts, where activity is chiefly valued, compactness and a middle size are preferred. There are no dairies. Cattle are reared of every size, colour, and breed; some for their milk, but nine tenths for their shape and bone,—to feed quickly, and to weigh well. The sheep are mostly Cheviot; but in many farms crossed with Leicester, and in a few, with Southdown, Hereford, and Spanish. Most of the tillage, and all the cartage, are performed by horses; but some respectable farmers approve of the partial use of oxen.

2. BERWICKSHIRE.

1. *Situation.*—This county is situated on the northern confines of Roxburghshire, but extends more to the eastward until it reaches the Ocean.

---

* It is well worthy of being recorded, that about the year 1778, the cultivation of tobacco was begun by Dr Jackson, who resided near Kelso, and who had learned the cultivation of it in America. It prospered exceedingly, and was extending itself over other parts of Scotland: In Roxburghshire alone, it was cultivated to the extent of several hundred acres. But on the return of peace with America, in 1782, it was thought expedient, by Government, to check the cultivation of this plant, which was done effectually, by the imposition of the same duty on it as upon American imported tobacco. This was more than could be afforded in the cold and moist climate of this country; and the cultivation of tobacco was in consequence abandoned.

2. *General Features.*—The general appearance towards the south, is a large expanse of cultivated lands, stretching the whole length from east to west, and with various inequalities of surface, as it slopes towards the Tweed. On the north, it consists of a series of bleak hills, that extend through its whole length, and occupy a still larger space. These give rise to a multitude of streamlets, and are intermixed throughout with a portion of arable land of considerable fertility. But this is chiefly confined to the margins of the different waters. The lower part of this county has long been reckoned one of the best cultivated districts in Scotland; the spirited cultivation of land, and the judicious management of stock, being skilfully blended. It has indeed a remarkable advantage in its warm southerly exposure, so well sheltered by its own hills in the back ground. On the other hand, being destitute both of coal and lime, and having no towns of note to consume its produce, the husbandmen have had to struggle against great obstacles, and of course, deserve the more praise for their energetic exertions.

3. *Proprietors, &c.*—The nobility who reside generally, or have seats in Berwickshire, are—the Earls of Buchan, Home, Haddington, Lauderdale, Wemyss, and Breadalbane; Lords Somerville and Blantyre, and the heirs of the late Earl of Marchmont. There is also a very numerous class of country gentlemen, whose castles, or elegant mansions, in the midst of surrounding woods and ornamental grounds, greatly embellish the face of the county. Dickson, Hay, Hood, Hume, Johnstone, Logan, Lumsden, Murray, Renton, Stewart, and Swinton, are the most prevalent surnames among the body of the people.

4. *Proportion in Cultivation.*—Collating the recent survey of the county with the statistical account of the different parishes, it appears that there are about 48½ parts in 100 under cultivation.

5. *Crops cultivated.*—Much wheat, barley, and oats, together with some beans, a few peas, and a little flax; but the culture of the last is yearly diminishing. Artificial grasses have been long introduced, and are raised very extensively. Potatoes are cultivated as far as can be consumed in the county; and turnips to a great extent, for feeding sheep and fattening cattle for the Edinburgh and English markets.

6. *Live Stock.*—There is, in this district, a strong and active race of horses, fitted for the deep soil of the county, and for the laborious work of long carriages to distant markets, through roads which require great exertions to keep them in repair.

The black cattle in general are much heavier than those in Roxburghshire, and much care is bestowed in raising them to a great size and of a handsome shape, with round bodies, to carry a heavy carcase to the shambles. In the lower parts of the county, next to Tweed, the sheep are nearly all of the Long-woolled kind, mostly of the Leicester, though some are still of the Mugg breed, or of a mixture between these two. In Lammermuir, there are now some Cheviots; though the Black-faced coarse-woolled kind, and a cross breed between them and the Cheviot, still prevail.

3. EAST-LOTHIAN, OR HADDINGTONSHIRE.

1. *Situation.*—The next county to the north of Berwickshire, is that of Haddington, or East-Lothian.

2. *General Features.*—When viewed at a distance, the general appearance of this county is that of an extensive plain, stretching through its whole length from east to west, having the sea on the one hand, and the Lammermuir hills on the other. The seemingly flat country, however, on a nearer inspection, is found to assume a variety of shape. Part of it rises with a gentle swell in the middle; part of it slopes in one direction, and part of it in another; whilst several detached hills of considerable altitude rise abruptly in different places, and of different forms. These, without subtracting much from the value of the surface, add greatly to the beauty of the scenery, by the variety in the aspect which they occasion. The hills that bound the county on the south, being part of the extensive range of Lammermuir, although they are included in the county of *Haddington*, make no part of *East-Lothian.* That appellation is limited to the plain country which lies between these hills and the sea.

3. *Proprietors, &c.*—The nobility who have mansions in this county, are, the Marquis of Tweeddale; the Earls of Haddington, Lauderdale, Wemyss, and Hopetoun; the Lords Sinclair, Blantyre, and Elibank; and the heirs of the late Duke of Roxburgh. The most prevalent surnames among the landed proprietors are, Fletcher, Cockburn, Hay, Hepburn, Dalrymple, and Hamilton. Among the opulent tenantry, the names of Begbie, Carfrae, Dods, Dudgeon, Howden, Renny, Skirvan, and Wight, are almost peculiar to East Lothian: the Browns, Humes, Hunters, Pringles, Walkers, &c. have also distinguished themselves by their skill and success in agriculture.

4. *Proportion in Cultivation.*—There is so little waste land in this county, that notwithstanding there being 40 square miles of the hills of Lammermuir attached to it, there will not be above 20 parts in 100 that are not already in cultivation. There is even reason to believe, from the ardent exertions of its husbandmen, who possess, in so eminent a degree, a spirit of improvement, that this proportion may be still farther reduced. Though this county has an extensive tract of sea coast, yet woods abound in many parts of it; and the plantations of Tyningham, in particular, are justly celebrated for their extent, and the excellent order in which they are kept.

The soil is, on the whole, favourable to production. Some part of it consists of a deep reddish loam, or a clay of the same colour, that yields to cultivation, and is remarkably productive, more especially in the eastern end of the county, near North Berwick, Linton, and Dunbar, and all along the coast side, until it joins Berwickshire. In another part, it is thin clay, of a greyish colour, on a *tilly* bottom, but capable of being rendered fertile by skilful husbandry. The proportion under the plough is perhaps greater than in most other territories, of an equal extent, in Scotland. For this there are several concurring causes; as, the nature of the soil itself, so easily wrought, and so friendly to the production of grain; the climate, generally mild, and comparatively dry; and the great abundance of limestone that is found throughout the county. Coal is also to be met with in several places, and quantities of sea-weed all along the coast; which are circumstances highly favourable to cultivation. All these in conjunction, render the labours of husbandry a much easier task than in most other districts in the kingdom. Hence a great avidity for farming land, and the high rents thence resulting, notwithstanding its distance from the metropolis, which, although not within its bounds, is the ultimate market for a large proportion of its produce, by a land-carriage of from 10 to 36 miles.

5. *Crops cultivated.*—Wheat, barley, and beans, are raised in the greatest perfection, also oats and peas. Not much flax is reared; as the more certain and lucrative crops of wheat and barley confine this scourging crop to moderate limits. Potatoes are raised to supply the inhabitants, and occasionally to feed the domestic animals, but not many for sale. Artificial grasses have long been cultivated so very generally, and to such an extent, that it would be almost affronting an East Lothian farmer to state this as a meritorious practice. The same may be observed of turnip, though more lately introduced.

6. *Live Stock.*—Grain is so much the object of culture here, that the rearing of stock is but a secondary consideration. Some very fine horses are, however, bred in the district, but the number is not equal to supply the demand. They are recruited, from time to time, from Clydesdale. Neither are there many cattle reared, nor sheep; but great numbers of both are annually bought, to be fattened on turnip and grass. A great supply of beef and mutton to the markets of Edinburgh is thereby afforded.

4. MID-LOTHIAN.

1. *Situation.*—To the westward of East-Lothian is situated Mid-Lothian, or the shire of Edinburgh.

2. *General Features.*—The aspect of this county is beautifully diversified into hill and plain country. The hills are divided into two distinct ranges. One, called the *Morefoots*, (a continuation of Lammermuir), is situated on the south and south-east, at the distance of 14 or 16 miles from the sea, and is in general clothed with green pasture: the other, called the *Pentlands*, of a more

dusky hue, is situated in the south-west, and approaches to within five miles of the sea, and within little more than three miles of Edinburgh, the capital. The last range divides the county into two large plains, which are united into one at their lower extremity next the sea. There are also several beautiful green hills that rise detached, of various form and aspect, in the lower part of the county. These give an unceasing variety to the prospect; and, in the embellishment arising from plantations and ornamental grounds around the many elegant mansions which every where abound, Mid-Lothian exceeds every other county in Scotland. The scenery of the vicinity of Edinburgh, in particular, is certainly inferior to none in Britain,—and indeed is supposed to equal any in Europe,—uniting the natural beauties of hills, and woods, and water, to the artificial ornaments of a highly cultivated, and thickly peopled country.

The soil is, however, not remarkable for natural fertility; but, having been enriched for ages, with the great quantity of manure from Edinburgh, it has long been in an increasing state of production, rendered still more valuable, from the great demand for every kind of crop or produce in the metropolis, and from the great facility of market which its contiguity affords.

3. *Proprietors, &c.*—The residing nobility, or those peers who have mansions here, are, the Duke of Buccleuch; the Marquisses of Lothian and Abercorn; the Earls of Morton, Moray, Dalhousie, Wemyss, and Roslyn; the Viscount Melville, and Lord Torphichen. Besides these, many of the Scottish nobility, and a great proportion of the opulent country gentlemen, reside occasionally at Edinburgh.

There can hardly be said to be any surnames peculiar to this county. The capital, which is situated within its bounds, occasions a continual influx of every tribe or clan in Scotland. The following names are of families that have long had possession of lands in Mid-Lothian; namely, Baird, Borthwick, Clerk, Dick, Drummond, Dundas, Foulis, Hope, Inglis, Nesbit, Scott, Trotter, Watson, Wauchope, and Wilkie.

4. *Proportion in Cultivation.*—However near the capital the lands in general lie, and notwithstanding the great population, yet, as the county contains within it several ranges of hills, inaccessible to tillage, the proportion of land in cultivation, is considerably less than in the adjacent counties to the east or west. It may amount to, but will not exceed, 64 parts in 100 of the whole surface.

5. *Crops cultivated.*—Wheat, barley, oats, beans, peas, and a small portion of flax. Potatoes are raised to a great extent, to supply Edinburgh market; turnips, also, in considerable quantity, for the same purpose, and, in the more remote quarters, for feeding of cattle and sheep. Artificial grasses have longer been in general cultivation here than in any other county in Scotland,

and still continue to be cultivated to a great extent, either for selling green in Edinburgh, or for making into hay. It is proper also to take notice of the vast number of gardens and nurseries to be met with, in almost every direction, in the vicinity of Edinburgh, and the quantities of vegetables raised, not only in the gardens, but even in the fields in the neighbourhood of that city.

6. *Live Stock.*—Some horses are reared in this county, but the greater part is purchased from Clydesdale. Cattle are not reared to any great extent, but are brought, from time to time, from the counties to the south, particularly milch cows from the shires of Roxburgh, Berwick, and East-Lothian. The farmers, in the more distant parts of the county, buy in Scots and other cattle, in the beginning of winter, chiefly from the Highlands, to consume straw, or to fatten on turnips. Sheep are chiefly confined to the hills, and the breed is most commonly of the black-faced Linton kind. A few swine are reared about mills, and on some farms, but not many altogether. Indeed, that species of live stock, is not so much attended to in Scotland as it deserves. Not that the people disrelish pork, but that there is not enough of unappropriated offal, on which they might be fattened with profit.

5. WEST-LOTHIAN.

1. *Situation.*—Immediately to the westward of Mid-Lothian, is situated the shire of Linlithgow, or West-Lothian.

2. *General Features.*—The surface of this small county, is pleasantly diversified with knoll and vale; for the heights every where scattered over the face of the county, hardly deserve the name of hills, as the whole of them are either susceptible of cultivation by the plough, or are admirably adapted to plantation. Some of them are already clothed with forest timber, more especially towards the east end of the county, where Lord Roseberry's plantations, on the sides and tops of the small hills of Barnbougle, are in a very rich style of beauty. Indeed, the whole county partakes very much of this species of decoration; whilst the expanse of the Firth of Forth, contracted for a great way opposite to this county, to a breadth of little more than two miles, has a very happy effect on the landscape. West-Lothian, on the whole, is remarkable both for the beauties which it owes to nature, and for the embellishment which it has received from the hands of man.

3. *Proprietors, &c.*—The residing nobility are, the Earls of Buchan, Roseberry, and Hopetoun. The Duke of Hamilton has a mansion in this county, but he never resides. The seat of the chief of the Dundasses at Dundas Castle, and the mansions of several of the cadets of that ancient and honourable house, are in this county; but there are only a few other names that can be said to be peculiar to it. Perhaps the surnames of Baillie, Livingston, Marjoribanks, Waddel, and Wardrope, may be stated as

such among the proprietors. Hamilton is also prevalent as a surname; but this name is spread over several counties in the south of Scotland.

4. *Proportion in Cultivation.*—It is already so much improved, that there are not above 25 parts in 100 to which cultivation has not extended. Even the uncultivated part is very susceptible of improvement; for the extent of hilly ground is inconsiderable, and so little elevated, that most of it is practicable to the very top, either by tillage or plantation. The great proportion of wastes at present, is an expanse of thin moorish grounds, and some morasses that remain still unsubdued in the south-westerly corner of the county, bordering on Lanarkshire. On the whole, 75 parts in 100 may be stated as already cultivated.

5. *Crops cultivated.*—The same as in Mid-Lothian; with this difference, that there is a little more flax, and turnips, as more cattle in proportion are fed; but fewer potatoes are planted, as few or none are raised for sale. In every respect, West-Lothian is a well cultivated and fertile county.

6. *Live Stock.*—More horses are reared than in Mid-Lothian, there being even a good many bred for sale. The breed resembles that of Clydesdale. More cattle are also reared; but still there are several required to be brought in yearly from the Highlands, to be fed on turnips, or for consuming the fodder. Of late, some cows have been brought from Ayrshire, and crosses from them are rearing. There are but few sheep, and these not remarkable for their quality.

To this general view of the different counties in this district, the following Table is added, for giving, in the most concise form, an account of those articles, which can be seen at once by tabular inspection. It is proper to mention, that the Scots standard ell has, by a very accurate examination, been found to be, not 37.2, but 37.0617 English inches: consequently, the Scots chain, instead of 74.4, is only 74.1234 feet. It is by this corrected length of the Scots chain, that the following columns of Scots acres are computed.

No. I.—AGRICULTURAL DISTRICT.

NAMES OF THE COUNTIES.	Square miles of land.	English acres in cultivation.	English acres not cultivated.	Total land in English acres.	Scots acres in cultivation.	Scots acres not cultivated.	Total land in Scots acres.	Proportion in 100 cultivated.	Number of parishes.
1. Roxburgh...	715	205,920	251,680	457,600	163,258	199,539	362,797	45	31
2. Berwick......	442	137,197	145,683	282,880	108,772	115,502	224,274	48.5	32
3. Haddington	262	139,264	34,816	174,080	110,412	27,603	138,015	80	24
4. Edinburgh..	354	144,999	81,561	226,560	114,959	64,664	179,623	64	31
5. Linlithgow..	120	57,600	19,200	76,800	45,667	15,222	60,889	75	13
Total......	1903	684,980	532,940	1,217,920	543,068	422,530	965,598	56.2	131

DISTRICT II.—THE SOUTHERN, OR PASTORAL DIVISION.

THE territory comprehended under this title, consists of the following counties:—1. Peebles; 2. Selkirk; 3. Dumfries; 4. Kirkcudbright; and 5. Wigton; the two latter being also known under the provincial name of Galloway.

1. SHIRE OF PEEBLES, OR TWEEDDALE.

1. *Situation.*—The first county included in this district is that of Peebles, or Tweeddale, as it is frequently called. It is situated to the westward of Selkirkshire, and north from that of Dumfries.

2. *General Features.*—Like to Selkirkshire it is chiefly a pastoral country, but has a double portion of arable land, there being 12 parts in 100 that are either already in cultivation, or may, from the present spirit of agriculture, soon be so. There will still remain 88 parts that cannot be cultivated, but which are fine pasture, still more verdant than the conterminous hills either of Selkirkshire or the Lothians. The arable land consists chiefly of fertile holms, or haugh land by the sides of the rivers, and is all cultivated in an enlightened and judicious style. The Tweed, which gives name to this county, intersects it in two parts nearly equal, as it rolls through it in a winding course of about 35 miles, with its banks in many places beautifully fringed with natural wood, (the remains of ancient forests), and receives five or six tributary streams as it flows along, all ornamented in the same manner.

3. *Proprietors, &c.*—The Earl of Wemyss has two old castles in ruins, Nidpath and Drochel. The Earl of Traquair and Lord Elibank have each a dignified mansion, but they seldom reside. The most prevalent surnames among the natives are, Forrester, Hay, Hog, Murray, Laidlaw, Tweedie and Welsh. Once, the clan Frazer, (called here Frizle), was numerous in Tweeddale; but it has latterly diminished. The Marquis of Tweeddale now represents the southern branch of that numerous, ancient, and respectable clan, one of the most distinguished of whom was the famed Sir Simon Frazer, who fought the battle of Roslin in 1302. He was at that time Sheriff of the county of Peebles.

4. *Proportion cultivated.*—Only 12 parts in 100.

5. *Crops cultivated.*—Every kind common to the south of Scotland, and as good in quality as can be expected from the climate, is cultivated in this district. Barley and wheat only are raised in the lower parts of the county. A kind of pea, of an early sort, has its name from this county, being called the *Peebles* pea. Potatoes have long been cultivated to an extent equal to the consumption in the county, and of late for seed to the Lothians, as being

free of the curl. Turnips and artificial grasses are cultivated as extensively as the limits of the arable land will admit.

6. *Live Stock.*—This county is remarkable for its numerous flocks of black-faced, coarse-woolled sheep, that are called the Tweeddale, from the county, or the Linton breed, from the town in which, at fairs, they are commonly purchased. The horses and cattle are similar to those in the Lothians, but not numerous, and generally smaller in size.

2. SELKIRKSHIRE.

1. *Situation.*—This county is situated to the east of Peebles-shire, and is a very mountainous, but pleasant pastoral district.

2. *General Features.*—It was anciently so much appropriated to hunting, or so much covered with wood, as to be called, by way of distinction, *The Forest.* Few tracts, however, of an equal extent in Scotland, have been so denuded of its wood as this; the only remains of it being limited to a few scattered bushes on the banks of the principal streams. Plantations of new wood are, however, beginning to arise around the mansions of the proprietors, and will in time renew the sylvan scenery. There is only a very small proportion of arable land, perhaps not above six parts in 100 in cultivation, or that could with propriety be brought into tillage. But this small proportion, which is chiefly holms by the sides of waters, is not only in general of great natural fertility, but is cultivated as judiciously as perhaps any land in Britain. The hills also are valuable, being for the greater part fine green pasture, and all of them a dry healthy sheepwalk.

3. *Proprietors, and prevalent Names.*—The Buccleuch family have a house in this county, where they occasionally reside. Lord Napier also has a good estate in it, which he annually visits. The only other nobleman who has property in Selkirkshire is the Earl of Traquair; but there are many elegant and dignified seats of the lesser barons, among whom the most prevalent surnames are, Anderson, Elliot, Murray, Pringle, and Scott. Among the tenantry, the following are the most prevalent names:—Anderson, Ballantyne, Bryden, Cunningham, Currie, Grieve, Laidlaw, Park, and Scott.

4. *Proportion cultivated.*—This amounts only to about 6 parts in 100.

5. *Crops cultivated.*—The small portion of arable land is not only very fertile, but lies warm, and, in the bottom of deep valleys, is early. The grain crops are as good as any in the south of Scotland, and of all kinds cultivated there. Potatoes are also generally raised for the use of the inhabitants; likewise turnips and artificial grasses for sheep and cattle. The crops are much improved by a vast quantity of fine shell marl, every

where to be met with. Water meadows have been pretty generally tried, but not with much success.

6. *Live Stock.*—Chiefly sheep, partly of the Cheviot breed, and partly of the Black-faced breed of Tweeddale. The latter kind is fast diminishing. The horses and cattle are good, but not numerous.

3. DUMFRIES-SHIRE.

1. *Situation.*—This extensive county, which has part of Cumberland, and the Solway Firth on the south, and is bounded in the other quarters by the Counties of Roxburh, Selkirk, Peebles, Lanark, Ayr, and the Stewartry of Kirkcudbright.

2. *General Features.*—The county is composed of three dales or valleys, with each its principal stream, from whence the name is derived. These are Nithsdale, Annandale and Eskdale, so called from the respective rivers of Nith, Annan, and Esk. Limestone abounds in this county, but coal is worked only in two places at its extremities, namely, at the head of Nithsdale in the north-west, and at the foot of Eskdale in the south-east, at a distance of 50 miles between them. From this circumstance arises the greatest obstacle to the improvement of the country; for wherever there is ready access to lime, the soil in Dumfries-shire is as well cultivated, and bears as fine crops of all kinds, as any where else in Scotland. Indeed, it has the most genial exposure of any county in North Britain. For, sheltered by its own mountains on the north and east, and by the hills of Galloway on the west, the low part of it is open to the south only; a direction from whence the wind is seldom violent, and never cold. This low part of the county, in which all its valleys unite in one great expanse of plain, sloping south towards the Solway Firth, is in general in a good state of cultivation, and much embellished with the plantations, enclosures, and other ornamental grounds, in the vicinity of the seats and mansions of the numerous proprietors.

3. *Proprietors, &c.*—The nobility who have mansions in this county, and who reside occasionally, are, the Duke of Buccleuch, the Marquis of Queensberry, and the Earls of Hopetoun and Mansfield. The Bells, Carruthers, Douglasses, Ellieses, Grahams, Jardines, Johnstons, Kilpatricks, Littles, Maxwells, and Scotts, so noted in ancient Border conflicts, are still among the most prevalent surnames.

4. *Proportion cultivated.*—From the Statistical Account of the different parishes, it would appear, that in Nithsdale, which (although it contains some highly cultivated and greatly embellished territory, yet) also comprehends a great proportion of barren mountains,—the proportion in cultivation will not exceed 30 parts in 100. Annandale, having a greater proportion of sea-coast, a much wider vale, and fewer mountains, will have 40 parts in 100; Eskdale, which has still a greater proportion of hill ground, will not exceed 12 parts in 100. On these data, the whole

lands in cultivation in Dumfries-shire, may amount to nearly 29 parts in 100.

5. *Crops cultivated.*—In the lower parts of the county, wheat, barley, turnips, &c. are raised; but in the higher parts, among the hills, the grain crops are limited to oats, barley, bear, and some wheat and peas. Potatoes are likewise cultivated very extensively; and turnips and artificial grasses are getting more and more into culture.

6. *Live Stock.*—Both horses and black cattle, of the Galloway breed, are of a good size. Sheep are very numerous on the hills. The Cheviots and Lintons have the run of the mountain walks; and the New Leicesters and South Downs, Muggs, or other breeds, are kept in the low arable farms.

4. KIRKCUDBRIGHT.

1. *Situation.*—It is situated on the Solway Firth, and to the west of Dumfries-shire; and is commonly called, not the *shire*, but the *stewartry* of Kirkcudbright. That distinction, however, is of no importance, as the laws and usages of the district, and the condition of the people, are not in any manner affected by it.

2. *General Features.*—This part of Galloway is greatly more extensive than Wigton, which composes the other part of that province, rises more into mountains, and stretches more inland from the sea: hence it is in some degree less fertile than Wigton. As to general aspect, it is nearly similar, except that the great body of cultivated land lies contiguous. For if a line were drawn from the park of Irongray to Gatehouse of Fleet, cutting the Dee at right angles, it would separate the arable from the barren district. Coal has not yet been found in any quantity, that could have an effect either on its improvement or its population. A lime-quarry has long been wrought in the parish of Kirkibson; and agriculture has received considerable aid from some fields of marl. On the whole, the district has the means of agricultural improvement, though not perhaps to the same extent as in other places. The soil itself, particularly near the sea, and by the sides of the rivers, is far from being unfertile, and it is also cultivated in many instances with much judgment and vigour. The pastures are generally good. Indeed, the general appearance of this county, sloping south towards the sea, with an unceasing variety in the prospect, as the surface changes from knoll to vale, and then to knoll again, makes it remarkably interesting. It ought to be observed among the peculiarities of Galloway, that the surface of the hills is generally broken by abrupt protuberances, steep banks, and rocky knolls, diversified into every possible variety of shape; and hence the scenery, in particular places, is peculiarly beautiful.

3. *Proprietors, &c.*—The Earl of Selkirk is the only nobleman who has a seat in this county. But there are in it many elegant and dignified mansions of other proprietors, such as Murray of

Broughton, and the representatives of the former titles of Earl of Nithsdale, and Viscount Kenmure; also the seat of Sir William Douglas, which, in point of elegance, is perhaps the first in the stewartry. This part of Galloway is the residence of many country gentlemen, among whom the most prevalent surname is Gordon. Formerly, the Macdowalls, descended from the ancient princes of the country, were very numerous; and they still possess considerable property in the two counties. Maclellan and Macghie were also once very powerful clans in this county, but are now much diminished. At present, the following names are almost peculiar to Galloway:—Macmillan, Macquinie, Macquarrie, Maccubin, Macmaster, Macgowan, Macquestion, Macgachen, Macmorine, Maclure, Maclurg, &c.; which, although evidently of Gaelic construction, yet the people are supposed to be as different from the northern clans, as these are from the inhabitants of the low country. It has indeed been supposed, that the Gallowegians are a race distinct from both.

4. *Proportion cultivated.*—From the recent survey it appears, that about two-thirds of the county may be stated as moors or mountains, of which the only land in cultivation is about one-tenth part along the sides of the different streams; and of the remaining third part, one-fourth of it is stated to be hills or wastes, unfit for tillage. On these data, it will be found, that about 32 parts in 100 may be the proportion in cultivation, or in plantations.

5. *Crops cultivated.*—The same as in the preceding county. Turnip and artificial grasses, which every where are the harbingers of correct cultivation, are getting more and more into the system of husbandry.

6. *Live Stock.*—An excellent breed of cattle, and small alert horses, seem to be peculiar to Galloway. There are large flocks of black-faced sheep, and numbers of swine.

5. THE SHIRE OF WIGTON.

1. *Situation.*—This is the most southerly county in Scotland, and the most westerly in this division. It is also the nearest to Ireland of any county in Britain.

2. *General Features.*—The general aspect is rough and hilly, more especially towards its northern boundary with Ayrshire: But there is a considerable extent of low land all along its winding coast, which is so deeply indented with bays and friths, as to have upwards of 100 miles of sea-shore. The county is generally considered under three subdivisions:—1. The *Rinns*, a long and narrow peninsula, on the south-west corner, nearly separated from the rest of the county by Loch Ryan and the Bay of Luce. 2. The *Machers*, upon the south coast; and, 3. The *Moors*, in the interior, and on the north. The two first are chiefly arable land, of considerable fertility, interspersed with green knolls, many of them in cultivation. Here, notwithstanding the disadvantages of having neither coal nor lime within the county, a very

correct system of agriculture has lately been introduced; and the face of the country begins also to be ornamented with plantations, chiefly through the influence and example of the late Earls of Stair and Galloway, and some other enterprizing landlords. The Moors, a hilly tract, extending over three-fourths of the district, contain hardly any arable land but what is situated in detached spots, which will scarcely amount to the tenth part of the whole.

3. *Proprietors, &c.*—The Earls of Galloway and Stair are the only residing nobility. The principal of the Lesser Barons are of the names of Agnew, Hay, Hathorn, Macdowall, Macculloch, Stewart, and Vans.

4. *Proportion cultivated.*—Collating the account given in the recent survey of the county, with the Statistical Account of the different parishes, it would seem that about 35 parts in 100 are either cultivated, or are laid out in pleasure grounds.

5. *Crops cultivated.*—Chiefly barley, bear, and oats. Wheat, has been introduced, and prospers well on the rich lands by the sea-coast. Potatoes are greatly used; and of late turnips, artificial grasses, and flax (on a small scale), have been raised in this county.

6. *Live Stock.*—An excellent breed of *polled* black cattle, are almost peculiar to this and the other district of Galloway, namely, Kirkcudbright. There is a small and alert species of horses also peculiar to this county, called *Galloways* from it, and chiefly used for riding. They are now becoming scarce in both counties; but are to be met with more frequently in the shire of Kirkcudbright than that of Wigton. A heavier kind is now introduced for the plough and for carriages. There are large flocks of hardy sheep: swine also are reared in several parts of the county.

No. II. PASTORAL DISTRICT.

NAMES OF THE COUNTIES.	Square miles of land.	English acres in cultivation.	English acres not cultivated.	Total land in English acres.	Scots acres in cultivation.	Scots acres not cultivated.	Total land in Scots acres.	Proportion in 100 cultivated.
1. Peebles.....	319	24,500	179,660	204,160	19,424	142,439	161,863	12
2. Selkirk.....	263	10,100	158,220	168,320	8,008	125,440	133,448	6
3. Dumfries...	1255	232,557	569,363	801,920	184,577	451,405	635,782	29
4. Kirkcudbright...	821½	168,243	357,517	525,760	133,387	283,448	416,835	32
5. Wigton.....	451½	101,136	187,824	288,960	80,183	148,912	229,095	35
Total......	3108	536,536	1,452,584	1,989,120	425,379	1,151,644	1,577,023	27

N. B. The lands in this district, marked not cultivated, consist chiefly of green-hi which, though excellent for pasture, are not accessible to the plough.

DISTRICT III. THE SOUTH-WEST LOWLANDS, OR MANUFACTURING DIVISION.

THIS division is composed of the following counties:—1. Ayr; 2. Renfrew; 3. Lanark; and 4. Dunbarton.

1. AYRSHIRE.

1. *Situation.*—This is the most southerly county in this division. It embraces above 70 miles of sea-coast on the Atlantic Ocean; and is bounded by the counties of Wigton and Kirkcudbright on the south, by Dumfries and Lanark on the north-east and east, and by Renfrew on the north.

2. *General Features.*—Of the three divisions of this extensive county, Carrick, the most southerly, is a hilly and rocky district, as the name imports. Kyle, in the centre, is more flat and fertile towards the sea; but, in the interior, it rises into high and barren hills; and Cunningham, on the north, though less hilly than either of these, contains a considerable proportion of rough and broken ground. The whole county slopes towards the sea on the west, and rises higher as it recedes, till it terminates in hills of considerable elevation, on the confines of Dumfries and Lanark shires. The air, in general, is mild; but the climate is moist, owing to its exposure to the south-west winds, and to the rains they waft from the Atlantic. A great proportion of the county is pastoral, or employed in the rearing and feeding of live stock; and the lands, where arable, are under a particular system of management, which is supposed best adapted to their situation in a climate, that renders unceasing attention necessary, in order to correct its humidity. All the lower parts of the county, and the banks of its numerous rivers, are thickly strewed with plantations around the mansions of its numerous proprietors; who, according to their views of the husbandry proper for the climate, have been distinguished as spirited cultivators, and have not spared expense on the improvement of the soil.

3. *Proprietors, &c.*—The peers who are possessed of property, and who reside either generally or occasionally within the county, are, the Earls of Eglinton, Cassillis, and lately Crawfurd; and the proprietors in their own right are, the Dutchess of Portland, and the Countess of Loudon and Moira. The most general surnames among the other proprietors are, Alexander, Boyd, Boyle, Blair, Boswell, Campbell, Cathcart, Cochrane, Crawford, Cunningham, Dalrymple, Dunlop, Fairlie, Fergusson, Fullarton, Kennedy, Logan, Macmichan, Millar, Montgomery, Mure, Wallace, and Whitford.

4. *Proportion in Cultivation.*—Adhering to Arrowsmith's map, as to the extent of the county, and to Mr Aiton's Survey, and estimating five-sixths of the clay, two-thirds of the sand, and nearly one-ninth part of the hill or moss to be arable, the whole land in cultivation will amount to 49 parts in 100.

5. *Crops cultivated.*—Wheat, beans, and barley, are raised near the sea-coast, and in the vicinity of towns; but, in the interior of the county, the grain crops are limited chiefly to oats, bear, and a small proportion of peas. Potatoes are generally and extensively cultivated, as are turnips on dry soils, especially in Carrick, and artificial grasses on all improved farms. Flax is also raised to a considerable extent. Pasture, on cultivated lands, and artificial grasses, is more common, or is continued for a greater number of years, in this western county, than along the east coast of Scotland, on account of its being more congenial to the greater humidity of the climate.

6. *Live Stock.*—Horses, of a good size, are bred in such numbers, as not only to supply the county, but to afford a large surplus for other districts; and many excellent horses, reared in Ayrshire, are sold in the Ruglen markets, and, on that account, have been confounded with the Clydesdale. There is also a good breed of cattle, particularly milch cows; and the dairy, especially for cheese, is more in practice here, than in any other county of Scotland. The sheep are chiefly of the Black-faced, coarse-woolled kind.

2. RENFREWSHIRE.

1. *Situation.*—This very populous, and in general, well cultivated county, which has Ayrshire on the south, and Lanark on the east, is washed on the north and west by the river and Firth of Clyde, * whence it has immediate access to the Atlantic Ocean.

2. *General Features.*—From the middle of the county towards the east, the lands are in general both level and fertile, more especially between the towns of Paisley and Renfrew, and in the tract that extends to the city of Glasgow, which this county nearly approaches. The whole shire, however, is by no means so fertile. It includes two considerable ranges of hills: the greatest and most elevated is in the west extremity, and extends over a space equal to one-third part of the whole county, but is intermixed with a small portion of land in cultivation; the other is situated in the south-east, but has neither such an extensive range of hills, nor so limited a share of arable land. It is between these two hilly districts, in a wide-spreading vale from south-west to north-east, that the greatest part of the fertile and highly cultivated lands of this county is situated. In this tract, there is a great

---

* A small part of this county, opposite to Renfrew, consisting of nearly 5100 English acres, is situated to the north of the Clyde.

display of gentlemen's seats, and villas of opulent manufacturers, and other individuals connected with commerce in their respective towns. Several of the landed proprietors, who have been, and still are manufacturers, have also distinguished themselves as most spirited improvers. They have embellished the country by their villas, and have contributed so much to the reclaiming of waste land, that there remains none of this description in the lower part of the county, except 1970 acres of deep moss, which, doubtless, these enterprising men, who are not easily startled at expense, will soon add to the quantity of arable land.

3. *Proprietors, &c.*—The peers who hold property, or who either generally or occasionally reside in the county, are the Marquis of Abercorn, the Earls of Eglinton and Glasgow, Viscount Cathcart, and the Lords Blantyre, Belhaven, and Douglas. The most prevalent surnames among the other landed proprietors, are, Alexander, Cunningham, Dunlop, Fleming, Fulton, Houston, King, MacDowal, Maxwell, Murdoch, Mure, Napier, Oswald, Pollock, Porterfield, Spiers, Shaw, Stewart, Walkinshaw, and Wallace.

4. *Proportion in Cultivation.*—It is calculated that the proportion in cultivation, which, forty years ago, did not exceed one-third part, is now one half of the whole, or 50 parts in 100, and the hills and green pasture 40 more; the heath, moors, and moss, being only ten parts.

5. *The Crops cultivated* are—Wheat, barley, bear, oats, beans and peas. The culture of wheat, though not general, has of late greatly increased. Beans and peas are not raised in great quantities. Potatoes are cultivated to a great extent, and in the utmost perfection. Ryegrass and clover are sown very generally, and the hay harvest is well managed. Few other green crops, except garden roots, are raised in this county.

6. *Live Stock.*—The horses raised in this county are numerous, and of an excellent breed. Great numbers of them are reared for sale. The cattle are of a considerable size; and the milch cows, like those of Ayr and Lanarkshires, are among the best in the kingdom. The sheep are of the coarse-woolled kind, which is best adapted to the pasture on the hills; but they are not generally so much esteemed as the breeds of some other counties. Some Merinos have of late been introduced.

3. LANARKSHIRE.

1. *Situation.*—This county is situated to the east of Renfrew and part of Ayrshire; to the north of Dumfries; to the west of Peebles, Edinburgh, and Linlithgow; to the south of Stirling and part of Dunbartonshire. It is sometimes called Clydesdale; though the vale of Clyde extends much farther down the river. It may be defined an inland county, with the advantage of a na-

vigable communication with the Atlantic Ocean, by means of the Firth of Clyde; and with the interior parts of the country, and the German Ocean, by means of the great canal which reaches from Clyde to the Firth of Forth.

2. *General Features.*—These are considerably different in the three wards into which this county is divided, for the greater convenience in administering justice. The Upper Ward, of which Lanark is the seat of justice as well as the county town, is, in general, very hilly and unfertile. The Middle Ward, of which Hamilton is the seat of justice, is less hilly, more fertile, and better cultivated. The Lower Ward, though the least considerable in point of extent, is the most fertile, and best cultivated; and, having Glasgow for its seat of justice, is by far the most populous. Notwithstanding these inequalities, the general appearance of the county is that of a large valley sloping pretty sharply from south-east to north-west on each side of the Clyde, which has several windings and turnings as it flows along. The breadth, at the lower end, comprehends nearly that of the whole shire, (viz. from 10 to 20 miles)—which is contracted greatly as it recedes inland, till at last a vast congeries of high hills, near the sources of the river, press closely on the mountain streamlets, and hide every thing but themselves from view. This valley is copiously watered by a multitude of streams tributary to the Clyde, and falling into it on both sides, as it rolls along in great majesty. The mountains or high hills on each side, supply the county with those valuable minerals, coal, limestone, iron and lead ores; which have all been wrought to a great extent and value, and which still continue to increase both in produce and demand. There are also, near the tributary streams of the Clyde, great manufactories of cotton and other goods, which not only vary the scenery, but give employment to a multitude of hands; and, by keeping up or increasing the population, afford a ready market, of easy access, to the produce of the soil; and thus these different sources of wealth become ultimately of the greatest importance to agriculture. Were once the proposed railway made between Glasgow and Berwick, or the canal between Edinburgh and Glasgow, which is projected, for opening additional markets for the minerals of this county, Clydesdale, from the stimulus of increased population, might become, even as an agricultural district, one of the most valuable counties in Scotland. At present, with all the variety of its general features, it is under a very spirited system of cultivation, chiefly owing to the influence or example of a numerous and highly respectable class of country gentlemen, and the laudable emulation of several opulent merchants, who have either retired from business, or have invested a part of their capital in land. Both these classes of proprietors extend the improvement of the soil, as well as the plantations and other rural embellishments,

which ornament the country.' Hence, for twenty-five miles in the lower end of the valley, the banks of the Clyde, when viewed at a distance, are so finely sheltered with growing timber, as to appear one extended forest of several miles in breadth.

3. *Proprietors, &c.*—The nobility who reside, or who have mansions or property in this county, are, the Duke of Hamilton, the Earl of Hyndford, Lords Elphinston, Belhaven, and Douglas. The prevalent surnames are those of Baillie, Boyle, Carmichael, Dalziel, Douglas, Lockhart, Somerville, and Stewart; but that of Hamilton is by far the most general among all ranks.

4. *Proportion in Cultivation.*—Collating what appears on this subject in the able Survey of the county by Mr Naesmith, with the Statistical Account of the different parishes, it appears that about 45 parts in 100 may be stated as in cultivation.

5. *Crops cultivated.*—In the lower parts of the county, along the Clyde, wheat and barley are cultivated to a considerable extent; but, in all the high and moorish tracts, the grain crops are limited to bear, oats, and a small proportion of peas. Great quantities of flax, and still greater of potatoes, are raised in all the districts of the county; and, of late, turnip and artificial grasses in very considerable quantities. Clydesdale has also been long famed for a species of crop, not so general any where else in Scotland, namely, fruit,—such as apples, pears, plums, cherries, &c. These are cultivated pretty extensively in what is called the Trough of Clyde, or the flat lands adjacent to the banks of that river. They are found in every cottager's garden, and are frequently to be met with in hedge-rows.

6. *Live Stock.*—This county has long been famed for an excellent breed of draught-horses, inferior perhaps to none in Britain for power, alertness, and docility. The horned cattle are of considerable size, and of good quality; and their milch cows are perhaps the best in the kingdom: but the sheep, on the rough and bleak hills, are of the black-faced and coarse-woolled kind, which are considered to be the best adapted to such a walk.

4. DUNBARTONSHIRE.

1. *Situation.*—This is the last county included in this district. It has Lochlong and Argyle on the west; the Firth of Clyde on the south; and Stirlingshire, for the most part, on the north and east. Part of it, a long narrow stripe, altogether separated from the rest, lies on the north side of Lanarkshire, and between that county and Stirling.

2. *General Features.*—The aspect of this county is singularly varied. Nothing can form a greater contrast than its high towering, but barren mountains, and the low, but very fertile valleys along the sides of its different waters, more especially on the north bank of the Clyde to the east of Dunbarton, and on both sides of the Leven, where the country is uncom-

monly ornamented. The Firth of Clyde, full of shipping, bounds it on the south; Lochgare from this Firth cuts deep into it on the south-west, and Lochlong skirts it nearly the whole way on the west; whilst Lochlomond, the largest and most beautiful fresh water lake in the island, of which only a third part is in Stirlingshire, bounds it on the east; and, with the towering mountain behind, adds greatly to the varied and picturesque scenery of the whole district.

3. *Proprietors, &c.*—The Dukes of Argyle and Montrose, Lords Elphinston, Blantyre, and Dundas, and Lady Mary Lindsay, all have considerable property; and the Duke of Argyle, and the Hon. Captain Elphinston Fleming, representative of the Earls of Wigton, have seats in this county. There are also many opulent country gentlemen residing on their estates, who have signalized themselves in the improvement of the soil, and the decoration, by plantations and otherwise, of their places of residence. The principal surnames of this class, and who have long had property in the county, are those of Buchanan, Campbell, Colquhoun, Edmonston, and Smollett. In the most remote corner, by the head of Lochlomond, the Gaelic language, and the surname of Macfarlane, an ancient, numerous, and respectable Highland clan, prevail. It may be here mentioned, that the ancient name of the county itself was Levenox, or Lennox, so called from the river Leven, into which most of the waters of this county flow, and from which name the Duke of Richmond has his Scots title.

4. *Proportion cultivated.*—From the best data which could be obtained, it appears that 37 parts in 100 are in cultivation. What is cultivated is remarkably fertile by nature. The parishes of Old and New Kirkpatrick are distinguished for cultivating the soil in the best manner.

5. *Crops cultivated.*—On the rich lands by the banks of the Leven and Clyde, wheat is cultivated, with every other species of corn; but the crops generally raised in the other parts of the county, are, bear, oats, and peas. Flax is also cultivated to a considerable extent; turnips in a less proportion; potatoes universally; and artificial grasses have been long introduced, and are now very general. *Woad* and *madder* were some years ago cultivated, not by the farmers, but by the manufacturers in the vicinity of the Leven bleachfields; but, though they turned to good account, they are now given up.

6. *Live Stock.*—The horses are generally of the excellent Clydesdale breed; but only a few of them are now reared within the county. The cattle, in the hilly parts, are of the small Highland breed, and of a larger size in the lower country; but neither kind are remarkable for their quality. The sheep were originally of the small white-faced breed, peculiar to the Highlands; but, for several years past, they have given place to the

black-faced and hardy breed from Tweeddale. In one of the islands of Lochlomond, the Duke of Montrose has about 240, and, in another, Sir James Colquhoun, 100 fallow deer.

No. III. MANUFACTURING DISTRICT.

NAMES OF THE COUNTIES.	Square miles of land.	English acres in cultivation,	English acres not cultivated,	Total land in English acres.	Scots acres in cultivation.	Scots acres not cultivated.	Total land in Scots acres.	Proportion in 100 cultivated.	Number of parishes.
1. Ayr	1039	325,830	339,130	664,960	258,326	268,871	527,197	49	46
2. Renfrew	225	72,000	72,000	144,000	57,083	57,083	114,166	50	17
3. Lanark	942	271,296	331,584	602,880	215,090	262,888	477,978	45	41
4. Dunbarton ..	228	53,990	91,930	145,920	42,805	72,884	115,689	37	12
Total	3434	723,116	834,644	1,557,760	573,304	661,726	1,235,030	462	116

DISTRICT IV.—THE CENTRAL DIVISION.

This district comprehends the counties of,—1. Fife; 2. Kinross; 3. Clackmannan; 4. Stirling; 5. Perth; 6. Forfar, or Angus.

1. FIFE.

1. *Situation.*—This populous and fertile county is surrounded on three sides by water; viz.—by the Firth of Forth on the south; the German Ocean on the east; and the Frith of Tay on the north. The counties of Clackmannan, Kinross, and Perth, bound it on the west.

2. *General Features.*—At a distance, it appears to be more hilly than it is in reality; for as it rises at once above the level of the sea, every inch of its elevation is seen. The two Lomond hills, whose altitude is very considerable, are conspicuous above the rest; and the hills on the sea-coast, though only of a moderate size, hide from the view all the level or flat country in the interior. Along the south, and more especially towards the south-east, there are some of the most fertile lands, generally pretty level, that are to be found in Scotland. There is a large valley in the middle, near Cupar, the county town, on each side of the river Eden, (hence sometimes called Strath-eden, at other times the *How of Fife*), which contains a great proportion of very productive soil; and there are some uncommonly fertile valleys among the hills, in the northern side of the county. The rivers, though they vary the scenery, are not very large; but from its extent of sea-coast, Fifeshire is favourably situated for manufactures, and abounds in towns and villages. Taking it in a general view, it may be defined a hill and dale county, beautifully varied in aspect and exposure; and in many places, in a high degree of cultivation, not only in its valleys or more level fields, but

even in its various hills, many of which are altogether under the dominion of the plough. This flourishing state of its agriculture is to be attributed to the mildness of the climate, (no part of it being above eight miles from the sea), and to its containing within itself an abundant supply of both lime and coal. The first conduces much to the fertilization of the soil, and the second operates as an encouragement to population. It may be added, that the numerous plantations scattered over the county, and particularly in the vicinity of the county town, protect the valleys from the inclemency of the season, and not only embellish the district, but show, in a striking point of view, the judicious arrangement of the Fifeshire husbandry.

3. *Proprietors, &c.*—The residing nobility in this county, are, the Earls of Rothes, Morton, Moray, Kelly, Elgin, Leven, Balcarras, and (lately) Crawfurd. The surnames most prevalent, many of which are almost peculiar to Fife, are Arnot, Anstruther, Balfour, Ballingall, Bethune, Blythe, Bogie, Clephane, Durham, Erskine, Fernie, Gourlay, Lindsay, Melville, Meldrum, Moncrieff, Patullo, Spense, Tod, and Wemyss.

4. *Proportion in Cultivation.*—According to the best data, this at present is 70 parts in 100.

5. *Crops cultivated.*—Wheat, barley, beans, peas, oats, the same as in the Lothians; though rather of an inferior quality. There is a great proportion of artificial grass, of potatoes and of turnip; but there is more flax: because, this being a manufacturing county, flax, as a raw material, is in more request than on the other side of the Forth.

6. *Live Stock.*—The inhabitants of Fife boast, that they have the best breed of cattle in Scotland. This, however, is controverted. It deserves, in this place, to be noticed, that this breed was much improved, about three centuries ago, by a mixture of the ancient Fifeshire cattle, with some fine English cows, which King Henry VII. of England sent to Falkland, as a present to his daughter, who was married to King James IV., and generally resided in the palace of Falkland. The horses are of much the same kinds with those in the Lothians, but are not as yet reared in sufficient quantity to supply the county; and several are therefore purchased annually from Ayrshire or Clydesdale. The sheep are not remarkable for either size of carcase, or quality of wool; nor are they numerous, except on the Lomond hills, where some flocks are kept.

2. KINROSS-SHIRE.

1. *Situation.*—This is a very small county, and situated in the north-west part of Fife, having Clackmannan on the south-west; to which it is now so far attached, as to be included in the jurisdiction of the same sheriff.

2. *General Features.*—The pellucid lake, Lochleven, with its isles, is its greatest beauty, and in the vicinity of Kinross, the

county town. A considerable extent of fertile land lies to the north of the lake; and there are several extensive plantations, particularly on the estates of Kinross and Blair-Adam, which both shelter the arable lands, and embellish the country. There are some high craggy hills, partly protuberant with bare rock, and partly verdant with pasture, which vary the scenery; and there is still a considerable extent of moorish land, with hills on the back grounds, to the westward of the lake and the town, which requires to be reclaimed or better cultivated. The whole of this small inland county is of high elevation, but in a progressive state of improvement.

3. *Proprietors, &c.*—The chief, if not the only residing proprietors, are Mr Graham of Kinross, and Mr Adam of Blair-Adam. The county is of too small dimensions to have any prevalent names.

4. *Proportion cultivated.*—This, from the Statistical Accounts of different parishes, is 60 parts in 100.

5. *Crops cultivated.*—On the fertile lands, which lie to the northward of the lake, near the towns of Kinross and Milnathort, all kinds of corn raised in the Lothians or Fifeshire, are cultivated with success. In the remote parts, among the moors and adjoining hills, the grain crops are restricted to oats, and bear or bigg, with a small proportion of peas. Some flax is also raised. Turnips and potatoes are cultivated over the whole county; and, with artificial grasses, which have been long introduced, are spreading farther every year among the moorish soils.

6. *Live Stock.*—The same as in Fife, with rather a greater proportion of sheep.

3. CLACKMANNANSHIRE.

1. *Situation.*—This county is confined on the south-west by the Frith of Forth, and embraced on its other boundaries by the shires of Stirling, Perth, Kinross, and Fife. In point of extent, it is the smallest in Scotland, and may justly be compared to a large garden, from its natural fertility and high state of cultivation.

2. *General Features.*—The Forth, at its upper extremity, a fine river gradually enlarging till it exceeds a mile in breadth, winds along its front; the Devon, a considerable stream, nearly bisects it lengthwise, whilst, in the back ground, the Ochil hills rise high and precipitous, and protect it from the northern blast. The soil is partly of that fertile land denominated *Carse*, and often loaded with crops of wheat; partly of a friable gravelly loam, which is equally adapted for raising turnips and broad clover; and partly of a moorish nature, not yet fully subdued by the plough. It has been cultivated, in general, with both ability and success, by its larger proprietors, its nu-

merous feuars, and its industrious farmers. Indeed, a number of the feuars, or small portioners, cultivate their property themselves: and a spirit of industry is very prevalent in this district.

3. *Proprietors, &c.*—The nobility connected with this county, are the Earl of Mansfield, Lord Dundas, and the Lady Baroness Abercromby of Aboukir. The most ancient of the other proprietors, who still retain a large proportion of the soil, are of the respectable names of Bruce and Erskine, the latter of whom is the representative both of the Earls of Marr in Aberdeenshire, and of the Lords Erskine of this county. There cannot be said to be any peculiar or prevalent names in so small a district.

4. *Proportion in Cultivation.*—Three-fourths of the whole surface, or the greater part of this very fertile county, or 75 parts in 100, are in cultivation; while the remainder, chiefly among the high swelling Ochils, is verdant pasture, and profitably employed as excellent sheep walks.

5. *Crops cultivated.*—Every kind that is found in the most improved counties of Scotland is cultivated here with success. But turnips, not being adapted to stiff coarse soils, are not extensively raised; nor is there any considerable proportion of woods or plantations.

6. *Live Stock.*—Not much attention is given to this branch of rural economy, because the raising of wheat and other kinds of corn is more profitable than the rearing of cattle.

4. STIRLINGSHIRE.

1. *Situation.*—This county (with the exception of the parish of Alva, and a small part of two other parishes, amounting to about 10 square miles) lies on the south bank of the Forth, and is bounded by the shires of Linlithgow, Lanark, Dunbarton, and Perth.

2. *General Features.*—'Its appearance,' as well expressed in the excellent Report by the late Mr Belches of Greenyards, 'is 'greatly diversified by rivers, mountains, woods, and valleys, 'variously arranged, and exhibiting, in many striking points of 'light, a great number of views extremely pleasing and pictur'esque. The variety, as well as richness of the prospect, is 'not a little increased by ancient towns and prospering villages 'appearing in various forms amidst fertile fields; their bustling 'scenes making an agreeable contrast with the more tranquil 'operations of husbandry.' To this it may be added, that it contains a very extensive valley, reaching through several parishes, and called by the name of the Carse of Stirling at the one end, and of the Carse of Falkirk at the other; and also the vale of Carron on the south, with the vales of Enrick and Strathblane on the west. The hills of Lennox on the south-west, those of Campsie in the middle, the towering mountain of Ben-Lomond, and the other bleak bounding hills, diversify the prospect; while

a great variety both of natural woods and plantations, ornaments the numerous seats of the proprietors.

3. *Proprietors, &c.*—The nobility connected with this county, and having mansions in it, are the Duke of Montrose, the Earl of Dunmore, and the Lords Napier and Dundas. The principal surnames among the numerous residing landlords, are Buchanan, Bruce, Cadell, Campbell, Dundas, Edington, Graham, Johnston, Lennox, Livingston, Ramsay, Spotiswood, and Stirling.

4. *Proportion in Cultivation.*—From the very able survey of this county, by the Reverend Dr Graham, collated with the statistical account of its different parishes, the proportion in cultivation appears to be 62½ parts in 100. Some, however, are inclined to think this overrated.

5. *Crops cultivated.*—In the rich carse lands, the crops chiefly cultivated, are wheat, beans, barley and clover. The beans and barley are in general uncommonly good. In the dry and light lands turnips are generally cultivated, and also artificial grasses. Oats are very common on all the poorer lands, as well as a small proportion of peas. Flax in small quantities has been raised for many years, and potatoes are universally cultivated.

6. *Live Stock.*—Horses of considerable size are reared in the county: but the best are imported from Clydesdale or Ayrshire. The cattle are not remarkably good; nor is the number annually reared sufficient to supply the county. Many are bought in either from the Northern counties, or the Highlands, at the different Falkirk fairs and trysts, which are the best frequented cattle markets in Scotland (sometimes 30,000 black cattle being found in one of these fairs.) The sheep, in general, are of the black-faced Linton breed. There are still a few goats and some deer, upon the mountains. The poultry and the pigeons in the Carse of Falkirk are uncommonly large, owing to the excellence of the grain they consume.

5. PERTHSHIRE.

1. *Situation.*—This is the most valuable, and one of the most extensive counties in Scotland. It is situated nearly in the heart of the kingdom. A detached corner of it reaches to the upper part of the Frith of Forth. The county town, once the capital of Scotland, stands on the banks of the river Tay; and the north-eastern part of the shire, reaches half way down the firth of Tay, or within a few miles of Dundee. On the north-east and north, it is bounded by Forfar and Aberdeen, on the north-west by Inverness, on the west by Argyle, on the south by Stirling and Clackmannan, and on the east by Kinross and Fife shires.

2. *General Features.*—This is not only a large county, but its general features are exhibited on a large scale. In no other coun-

ty in Scotland is there so much conterminous land in cultivation. Its mountains are amongst the highest and most towering in Britain. Its rivers are large, and numerous, with their banks in general finely wooded. Its lakes are many, full and extensive, and some of them are adorned by nature in the grandest style of picturesque beauty, presenting scenery almost unrivalled in the island. Each of its great divisions was anciently a separate jurisdiction, inhabited by its chieftain or lord, and his dependant vassals, chiefly of his own clan. These divisions are disjoined from each other by natural limits; and their names are, 1, Monteith in the south-west; 2, Strathearn, in the south; 3, Perth, proper, in the centre; 4, Gowrie, in the east; 5, Stormont, on the north-east; 6, Athol on the north; 7, Rannoch, on the north-west; and, 8, Breadalbane, on the west. A description of each of these districts will be found in the Appendix, No. 5. Besides these, there is a small detached territory of about 16 square miles on the coast of the Frith of Forth, already mentioned as bounding the county of Clackmannan, to which it is now proposed to be annexed. It deserves to be remarked, that this is the only part of Perthshire that contains coal; and that, though limestone abounds in the county, little lime is used, except what is brought from other places by the Frith of Tay; and the fertility of the soil is more owing to its inherent good qualities, than to any adventitious stimulus from that manure. It should, however, be noticed, that there still remain considerable forests of natural wood in many parts of this county, and that both these, with the numerous plantations around the seats of the principal proprietors, as well as the hedge-rows and thriving fences of wood, shelter the land, and consequently add to its fertility.

Proprietors, &c.—The nobility who are connected with the county, most of whom occasionally reside in it, are the Dukes of Athol and Montrose, the Earls of Moray, Kinnoul, Wemyss, Breadalbane, Dunmore, and Mansfield, Viscount Melville, and the Lords Gray, Rollo, Ruthven, Kinnaird, and Keith. Among the lesser barons, the most general names are Drummond, M'Nab, M'Gregor, Menzies, Oliphant, and Rattray, which are almost peculiar to the county; and Campbell, Graham, Keir, Murray, Robertson, Stewart, and Stirling, which are the most numerous, not only among the landholders, but the great body of the people, more especially in the Highland straths, where the chieftain is still surrounded by his own clan.

4. *Proportion in Cultivation.*—In a territory like this, containing such a proportion of mountains, and so many detached hills, it cannot be calculated from certain data; but, by collating the Statistical Accounts of the different parishes with Dr Robertson's valuable Survey of the county, it may be stated, that the proportion of land in cultivation is 32 parts in 100.

5. *Crops cultivated.*—In the extensive and highly fertilized district of the Carse of Gowrie, much wheat, barley, and beans is raised; and the produce in general is remarkably abundant, and of excellent quality. The same character applies to the crops in the lower extremity of Strathearn, and to those also in the rich flat country round the town of Perth; but in the higher straths among the mountains, the cultivation of grain is limited chiefly to bear and oats, and some of these oats are of the inferior black kind, termed small oats or *shiacks*. A small proportion of peas is sown, and a considerable quantity of flax is raised in all the districts. Potatoes are cultivated universally, and generally with great advantage; but the cultivation of turnips, and the artificial grasses, is limited to the lower and middle districts.

6. *Live Stock.*—A great number of horses is reared within the county; but the best draught horses are still brought from Clydesdale or Ayrshire. The cattle are of various sizes and qualities in the different districts. In the lower parts many are purchased from Aberdeen or Forfar shires. The Highlanders have a hardy and handsome, though small race, bred among the hills, which are in great request among the arable Lowland farmers, for fattening on turnip, consuming straw, and increasing farm-yard dung. The sheep are, almost exclusively, of the Black-faced Linton kind. Many herds of deer are still kept in the higher districts, particularly in Athol; and wherever they are allowed to roam at large, turnips, if within their reach, cannot be preserved in winter.

6. ANGUS, OR FORFARSHIRE.

1. *Situation.*—This county embraces about 35 miles of sea-coast, viz. 24 along the German Ocean on the east, and 11 along the Frith of Tay on the south. It is bounded by Perth on the west, and by the shires of Aberdeen and Kincardine on the north.

2. *General Features.*—Above a third part of it on the northern boundary is either hilly next the great valley, or rises into mountains farther back; being a portion of that range of the Grampians, which extends in a south-west direction from the north-east point of Kincardineshire, near Aberdeen, almost to Stirling. The elevation of these hills and mountains above the great valley, rises on the north from 1500 to 2800 feet; and the country between them and the plain is called the Braes of Angus. About five or six miles south from the base of the Grampians, a lower range called the Sidlaw hills, partly cultivated, but partly incapable of cultivation, runs in a parallel direction. Between these two, lies the *valley of Strathmore*, or *The great valley*, as the name denotes in Gaelic. On the other side of the Sidlaw hills, and sloping a little toward the sea, lies another district, six or eight miles broad, almost wholly in cultivation, but with a considerable diversity of surface, being composed of small knolls,

or hills of a moderate altitude, interspersed with narrow, but generally fertile vales. The country is also richly adorned with plantations around the seats of its many opulent and respectable proprietors; and from the prevalence of manufactures, not only the sea ports, but a number of towns and villages, are filled with inhabitants. A few fresh water lakes lately varied the scenery, but these have been in a great measure drained; and they have yielded immense quantities of the purest shell marl, which have been of infinite service in improving the Braes of Angus, a district to which coal could not be carried but at a great expense; nor could limestone, even if it had been both plentiful and of good quality, be burnt for want of fuel. It is owing to the abundance of marl, that the face of that remote part of the county has been so much altered, and that rich crops of corn are now raised: the soil is also in a progressive state of improvement. These are the general features of the county of Angus, which has been long famed for its agriculture, and for the energetic exertions of its husbandmen.

3. *Proprietors, &c.*—The nobility connected with this county, and who either generally, or occasionally reside, are the Earls of Strathmore, North Esk, and Airly; Viscount Duncan, and Lord Douglas of Douglas; also Maule of Panmure, and Carnegy of South Esk, as representatives of the attainted peers of these names. The most antient other surnames among the proprietors, are Dempster, Erskine, Fletcher, Fotheringham, Guthrie, Haliburton, Lyall, and Skene.

4. *Proportion in Cultivation.*—According to the best data that could be obtained, this is 65 in 100.

5. *Crops cultivated.*—In the coast side division, and in the valley of Strathmore, there is much wheat and barley cultivated, and the quality of both is generally excellent. Indeed the soil of these two large districts is fit for the cultivation of every kind of crop that is raised in Scotland. Turnip and artificial grasses are cultivated extensively, and potatoes universally. Flax was raised very generally, till of late years, when it became difficult to procure good seed; but it is still found in many places, and cultivated with success.

6. *Live Stock.*—Many horses are brought from Clydesdale and Ayrshire; though a great number is now reared within the county. The breed of cattle is strong and handsome, much attention being paid to that species of stock. Sheep are generally of the Black-faced Linton breed, which seem to be a favourite kind over a great part of Scotland, from an idea pretty generally entertained, that they are the most hardy. Some other kinds have been introduced; and the old White-faced breed is still retained in a few places.

No. IV. CENTRAL DISTRICT.

NAMES OF THE COUNTIES.	Square miles of land.	English acres in cultivation.	English acres not cultivated.	Total land in English acres.	Scots acres in cultivation.	Scots acres not cultivated.	Total land in Scots acres.	Proportion in 100 cultivated.	No. of parishes
1. Fife.........	467	209,216	89,664	298,880	165,872	71,088	236,960	70	60
2. Kinross......	72	27,648	18,432	46,080	21,920	14,613	36,533	60	4
3. Clackmannan	48	23,040	7,680	30,720	18,267	6,089	24,356	75	4
4. Stirling......	489	195,600	117,360	312,960	155,076	93,046	246,122	62½	22
5. Perth.........	2588	530,022	1,126,298	1,656,320	420,215	892,957	1,313,179	3[illegible]	79
6. Augus.......	888	369,408	198,912	568,320	292,876	157,702	450,578	65	53
Total.........	4552	1,354,934	1,558,346	2,913,280	1,074,226	1,235,495	2,309,721	46½	219

DISTRICT V.—NORTH-EAST LOWLANDS.

THIS district consists of the following counties:

1. Kincardine,—2. Aberdeen.—3. Elgin.—4. Banff.—5. Nairn.

1. KINCARDINE, OR THE MEARNS.

1. *Situation.*—This county is embraced by forty miles of sea coast, from its boundary with Angus, to the mouth of the harbour at Aberdeen, and the Dee divides it for a considerable way from that county.

2. *General Features.*—A continuation of the Grampians, varying from 200 to 2600 feet above the level of the sea, reaches from its boundary with Angus to the bay of Nigg, within a mile of Aberdeen. On the north of that range of mountains, lies that part of the antient division of Marr, which has, for many centuries, been annexed to Kincardineshire; and the river Dee, for about 9 miles, runs through the upper part of this district. On the south of the above mentioned range, for about 18 miles, adjoining to its boundary with Angus, lies that continuation of the antient valley of Strathmore, which is now called the How of the Mearns, and which terminates about four miles from Stonehaven, the county town. Between that valley and the sea, there is a considerable proportion of hilly and broken ground. The lands on the southern part of the coast are naturally fertile, and in many places extremely well cultivated. But from Stonehaven, northwards, the soil is moorish, and the aspect of the country bleak; till at last, with the exception of a few patches of arable land, it is almost covered with heath, or peat moss, as it approaches Aberdeen. Yet, in the parish of Nigg, (a *corner*, as the word signifies), on its north-eastern boundary, the enterprising spirit of the Aberdeenshire improvers has animated the

cultivators of this part of Kincardineshire. In the middle and southern parts of the county, great improvements in agriculture were made by the principal proprietors, particularly by the late Robert Barclay, Esq. of Ury, before the farmers in general devoted much attention to the cultivation of the soil. By the proprietors also the face of the country has been embellished with plantations, more especially near the river Dee; where 5000 acres of growing timber may be seen nearly contiguous. In the How, and also in the southern part of the coast, there are considerable quantities of wood; but, for the last ten miles, or northern part of the sea coast, wood either disappears altogether, or is not in a thriving condition.

3. *Proprietors, &c.*—The nobility connected with this county, are the Earls of Kintore and Peterborough, (the former of whom has by far the most valuable estate in the Mearns), the Viscount Arbuthnot, and Lord Keith. Of the most antient of the other proprietors, the names are Barclay, Burnett, Carnegie, Douglass, Nicholson, Ramsay, Stratton, and Scott. This last name is very numerous among all ranks, on the southern part of the coast, perhaps more so than any where else, excepting in their native district on the English border.

4. *Proportion in Cultivation.*—From a minute investigation in 1807, there was found to be in cultivation by tillage, 31 parts in 100; and under plantation, 7 parts, or 38 parts in 100, of both; of the remaining 62, about 12 parts only are supposed capable of improvement. The ground unfit for cultivation, is chiefly the hilly tract of the Grampians, which becomes mountainous on its western boundary.

5. *Crops cultivated.*—In the southern part along the coast, there are raised as good crops of wheat and beans as perhaps any where else in Scotland; but in the rest of the county, the grain crops are limited to oats and bear, with a small proportion of barley, peas, and flax. Potatoes are very generally cultivated over the whole county; and there is a large proportion of the arable land, either in turnip or in artificial grasses.

6. *Live Stock.*—A number of horses, nearly sufficient for the purposes of agriculture, are reared within the county. These were originally of the Ayrshire or Clydesdale breeds. Of late, the Suffolk has been partially introduced. There are numerous herds of well shaped and good sized cattle, to which considerable additions are yearly brought from Aberdeenshire. The sheep are either of the old native yellow-legged sort, or of the black-faced kind, brought from Peebles-shire; which breed is hardy, and thrives better on the scanty pasture, and cold exposure of the Grampians, than any other.

2. ABERDEENSHIRE.

1. *Situation.*—The maritime part of this county is a large promontory, that extends far into the German Ocean; and its north-

east extremity is also the north-east corner of Scotland; for though a great part of that kingdom lies farther to the north, none of it extends so far to the east. The extent of sea coast is about 56 miles. The counties of Kincardine, Forfar, and Perth, are on the south and south-west of Aberdeenshire, the most inland part of which is 85 miles distant from the north-east point on the sea coast. The counties of Inverness and Banff bound it on the north-west and north.

2. *General Features.*—These are considerably different in the five divisions of the county. Marr is hilly even in the lower parts; but the inland or highland subdivision, viz. Braemar, is a very mountainous district, few of its bounding mountains being less than 3000 feet, and several of them from 4000 to 4300 feet above the level of the sea. Stathboggie is in general very hilly, and contains several mountains. The Garioch is a large and beautiful valley, naturally very fertile, and most of its bounding hills are of moderate dimensions. Formartin also contains several hills, and a considerable proportion both of moors and peat moss, interspersed with some good arable lands, particularly at its two extremities. Buchan contains only one hill of considerable altitude; and a large proportion of moor and peat moss, with a small quantity of wood. On a comprehensive view of the aspect of this county, it may be said, that with the exception of the sea coast of Buchan, which is flat, and of the south-west division, which is mountainous, Aberdeenshire in general is a hilly country. It contains, however, many large and fertile valleys; and there is a considerable portion of good land along the banks of its numerous streams, in high cultivation; while the exertions of both proprietors and farmers, in other less fertile districts, either in reclaiming waste lands, or in cultivating soils that are naturally unproductive, have seldom been equalled, certainly have not been exceeded, in any part of the United Kingdom.

3. *Proprietors, &c.*—The noblemen who are proprietors of land, and who reside either generally or occasionally within the county, are, the * Duke of Gordon, the Earls of Errol, Aboyne, Kintore, Aberdeen, and Fife, and the Lords Forbes and Salton. Of the numerous and respectable freeholders of this county, the most prevalent names are, Anderson, Bannerman, Burnett, Cumming, Duff, Farquharson, Ferguson, Forbes, Fraser, Hay, Irvine, Keith, Leslie, Leith, Lumsden, Milne, Morison, Robertson, Skene, Udny, and Urquhart; but, above all, that of Gordon, of which name there are more than 20 persons who rank among the more considerable landed proprietors.

---

* The Marquis of Huntly, Lord Lieutenant of the county, resides at Huntly Lodge. His father, the Duke of Gordon, is proprietor of about 70,000 English acres in Aberdeenshire, and 580,000 acres more in Banff, Moray, and Inverness; in all, 650,000 English acres; or above 1000 square miles.

4. *Proportion in Cultivation.*—This, in Dr Skene Keith's Report, is stated to be 36 parts in 100, exclusive of the plantations, which amount to at least two parts more; and of natural woods, chiefly in the higher districts, growing very irregularly, which are supposed to cover, partially, nearly 8 parts in the 100. It is also supposed, that 26 parts more are susceptible of improvement, either by the plough, or by trenching with the spade and mattock; a mode of reclaiming waste lands much used in this county.

5. *Crops cultivated.*—These are chiefly bear or bigg, and oats. Wheat has also been raised partially within these 30 years, and of late has spread rapidly in the more improved districts. Barley has also been tried by the best farmers, but is rather declining, because it is frequently injured by the equinoctial rains. Peas and beans are sown to advantage; and the latter are drilled successfully on the coast of Buchan, but more rarely succeed in the interior parts of the county. Potatoes, turnips, and artificial grasses, are cultivated very generally, while flax is raised in small patches for family use. In no part of the island, are improvements carried on at so great an expense, as in the vicinity of Aberdeen.

6. *Live Stock.*—The horses, in the lower and more fertile districts of the county, are either of the Clydesdale breed, or a mixture of the native with the breed of Clydesdale, Ayrshire, or some other of the southern counties. In the middle districts, they are generally native, light, and active, but better adapted for the saddle than for heavy labour. In the higher districts, they are purely native, except on the farms occupied by proprietors; and are called in the south of Scotland, *Highland garrons*, being only from 11 to 13 hands high, but remarkably alert, hardy, and sure-footed. Excellent breeds of cattle are to be met with over all the county, more especially in the Garioch, which is naturally the most fertile; and in Buchan, which, owing to its maritime situation, has received the greatest improvement, but where, forty years ago, previous to the introduction of the new husbandry, the cattle were inferior to those in all the other districts, Braemar only excepted. Those now raised by the landed proprietors, and improving farmers of Aberdeenshire, are inferior to none in Scotland, and are considered to be equal to any in England. The sheep are partly of the native kind, (with yellow faces and legs, and generally fine wool), and partly of the Linton breed, with black faces and coarse wool, but very hardy. These, after being fed in the Highland glens, are frequently carried back to the southern counties. A few of the different English breeds, and even of the Merinos, have lately been introduced. A considerable number of goats is reared in the upper parts of the county. As to swine, Aberdeen has long been noted for exporting salted pork. This originally occasion-

ed a number of hogs to be reared within the county; but pork is either exported, or used as a dish at the tables of the opulent, not being generally relished by the common people.

3. BANFFSHIRE.

1. *Situation.*—This county lies to the north and north-west of Aberdeenshire; and embraces an extent of 30 miles of sea coast on the south entrance of the Murray Firth. It is situated to the south-east of Murray, near the sea; and, in the more inland parts, is bounded by Inverness-shire on the south-west. An extent of about 20 square miles of this county, included in the preceding article, is situated in four detached parts of Aberdeenshire, and subject to the jurisdiction of the Sheriff of Aberdeen, although it pays the land-tax in the county of Banff.

2. *General Features.*—The tops of the highest mountains belonging to this county, (among which Cairngorum, elevated 4060 feet above the level of the sea, is pre-eminent), are barren; but they produce topazes, and other precious stones, called, from the principal mountain where they are found, *Cairngorums.* The ridges of this alpine district, and the summits of the hills, are covered, partly with heath, partly with peat moss; while the glens and lower parts of the mountains, and the sides of the hills, with the adjacent narrow valleys, produce the different tribes of grasses. A very considerable proportion of natural woods, consisting chiefly of birch and alder, and occasionally interspersed with aspen and hazel, is found near the banks of the different streams, especially in the higher districts. These tend very much to ornament the country, and vary the scenery, while they are generally useful in affording shelter to the sheep and black cattle. In the maritime district, which consists of two subdivisions—the Boyne, and the Enzie—a great proportion of very fertile land was, chiefly through the example and influence of the then Earl of Findlater, brought into a state of good cultivation, above forty years ago; but, of late, in the middle division of the county, the greatest exertions have been made. On the whole, Banffshire may be described, in the words of the late Mr James Donaldson, as a hilly, and in some places a mountainous country, (except the tract along the sea shore), interspersed with many fertile vallies, which are well adapted to the cultivation of grass and corn.

3. *Proprietors, &c.*—The nobility, who either reside, or have mansions in this county, are, the Duke of Gordon, and the Earls of Seafield and Fife. Gordon castle, the magnificent seat of the Duke, is situated on the north-west boundary of the county. An ideal line, through which a small brook anciently flowed, is here the boundary between Banff and Moray shires. The castle, strictly speaking, is in the former county; and the stables which are attached to, and make part of this immense building, are in the latter, as is also the town of Fochabers, though on the south

bank of the Spey. His Grace is proprietor of above one third of the whole surface of the county. The Earl of Seafield, uniting the two great estates of the late Earl of Findlater, and Sir James Grant of Grant, has a spacious mansion at Cullen house. The Earl of Fife, along with a very valuable estate, has an elegant modern building at Duff house; and Sir George Abercrombie of Birkenbog, as successor to the late Lord Banff, has a spacious family seat at Forglen, near Turrif. About two thirds of the county belong to these three great proprietors. The most general names of the freeholders are, Gordon, Grant, and Duff: but those of Abercrombie, Innes, Leslie, and Morison, are also numerous.

4. *Proportion in Cultivation.*—In the maritime districts, above two-thirds—in the midland about one-half—and in the mountainous districts less than one-tenth—is either under the plough, or covered with wood. Of the whole county, only three-tenths are either cultivated, or in artificial plantations.

5. *Crops cultivated.*—Near the sea-coast, and in some of the best lands, there is a proportion of wheat, barley, and beans; but the crops, generally cultivated, are oats and bear, with a small proportion of peas. Flax, in small patches, is raised in many places; and potatoes every where, for domestic use. Turnip and artificial grasses are cultivated pretty generally, both in the lower and middle districts.

6. *Live Stock.*—A good breed of horses is reared in the county, partly from stallions of the Ayrshire and Clydesdale kinds, and in numbers sufficient to supply the demand of the farmer; but a considerable number of saddle and carriage horses are brought from other districts. The black cattle, formerly small in size, though of good quality, have been much improved by better keeping, in consequence of turnips and artificial grasses being generally cultivated. Different breeds of sheep have been introduced; but the most prevalent kinds are, the black-faced Linton, and the yellow-faced native. Swine are fed in considerable numbers, chiefly for the Aberdeen market.

4. ELGINSHIRE. *

1. *Situation.*—This county lies near Banffshire to the westward, and is bounded on the west by the shires of Nairn and Inverness.

2. *General Features.*—In the inland parts, the county is hilly; and, in the more remote districts, approaches to mountainous. The lower, or maritime division, is naturally very fertile, with a mild climate, (in this respect supposed at least equal to any county in Scotland), and has been for ages very generally in

---

* This county is ſometimes called Murray, or Moray; but the terms are not ſynonymous, as that ancient province included much more territory than the preſent diſtrict; for in the ancient province, not only the county of Nairn, but alſo that of Inverneſs, were included.

cultivation. It is considerably ornamented with natural woods, plantations, gardens, and orchards, belonging to the numerous proprietors, whose seats are thickly scattered over the whole county. Even in the more inland parts, which are but little adapted to cultivation, there are to be found several sequestered vallies under culture, along the sides of the numerous streams; and there is a considerable proportion of natural wood, chiefly firs, of great size and value.

3. *Proprietors, &c.*—The nobility who are connected with this county, and have mansions in it, are, the Duke of Gordon, and the Earls of Seafield and Fife. They possess a considerable share of the property. The chief surnames among the respectable freeholders are, Brodie, Cumine, Duff, Dunbar, Gordon, Grant, and Innes.

4. *Proportion in Cultivation.*—This, according to the best accounts which could be obtained, is 40 parts in 100; including artificial plantations near the seats of the proprietors. The natural woods do not belong to this article.

5. *Crops cultivated.*—Wheat is raised in the lower parts next the sea; barley and beans also grow there to advantage; for, in this fertile soil and fine climate, any crop may be raised that is cultivated in Scotland; but, in the rest of the county, the principal crops are oats, bear, and peas. Potatoes have been cultivated as early and successfully here as anywhere else in Scotland, and are raised universally for domestic use. Turnip and artificial grasses, till of late, were cultivated in small quantities, but they are every year becoming more general.

6. *Live Stock.*—A considerable improvement, of late, has taken place in the breed of horses. The black cattle are also improved by a cross breed from the Isle of Mull. Attempts had before been made to improve them, by a cross of the Lancashire and of the Dutch breeds; but these were by no means successful. A handsome small breed is still retained in the higher parts of the county. The sheep are chiefly of the old native yellow-faced and Highland breed, that seem hitherto to have been too much neglected. They have fine wool; their mutton, though small, (7 or 8 lib. per quarter), is of excellent quality, and they are very hardy; consequently well adapted to an alpine pasture.

5. NAIRNSHIRE.

1. *Situation.*—This small county is situated on the Murray Frith, (where it has 15 miles of sea coast), and has Elginshire or Moray, of which it anciently made a part, on the east; and Inverness-shire on the west. It has also two detached territories included within its jurisdiction, namely, Ferintosh, locally situated near Dingwall in Ross-shire; and Dunmaglass, locally situated in the county of Inverness, at the head of Strathnairn.

2. *General Features.*—A considerable proportion of this small

county, near the Murray Frith, is pretty level, and very fertile; farther back it is hilly, but can scarcely be called mountainous. The detached part, called Strathnairn, is a narrow valley in the Highlands: the other detached part, Ferintosh, is mostly all arable, and, till of late, carried on a great trade in distilling whisky, which for a long period paid no duty to government. Viewed as a whole, independent of these two districts, the county, in general, is pretty much diversified into hill and dale, with much natural wood and plantations, by the banks of its different streams, and round the mansions of its different landholders.

3. *Proprietors, &c.*—The only nobleman who occasionally resides in it is Lord Cawdor; his seat is the ancient castle of Cawdor, so renowned by Shakespeare. The prevalent names among the proprietors are, Brodie, Campbell, Cumine, Dunbar, Gordon, and Rose.

4. *Proportion in Cultivation.*—Collating the Statistical Account of the different parishes, with the survey of the county, it seems probable that the proportion in cultivation, including artificial plantations, is 30 parts in 100. This is much less than that of the neighbouring county of Elgin, both because there is a less proportion of fertile land along the shore, and because a number of moving sandhills have already covered a considerable tract of land that was formerly fertile, and threaten to destroy a still greater extent.

5. *Crops cultivated.*—A small proportion of wheat and barley is raised upon the richer land; but, in other respects, the same crops are cultivated as in the neighbouring county of Elgin. Improved agriculture, though lately introduced, is every year spreading extensively.

6. *Live Stock.*—The people are now beginning to improve both the breed of their horses and their black cattle, chiefly by selecting the best of their own, and improving their keep, instead of persisting in bringing larger breeds from other places, which, after repeated trials, were not found to answer. They also prefer the native sheep, which seem best adapted to the climate.

No. V. THE NORTH-EAST LOWLANDS.

NAMES OF THE COUNTIES	Square miles of land.	English acres in cultivation.	English acres not cultivated.	Total land in English acres.	Scots acres in cultivation.	Scots acres not cultivated.	Total land in Scots acres.	Proportion in 100 cultivated.	No. of parishe
1. Kincardine.	380	92,416	150,784	243,200	73,270	119,545	192,815	38	1
2. Aberdeen ..	1960	451,584	802,816	1,254,400	358,027	636,493	994,520	36	8
3. Banff.......	645	123,840	288,960	412,800	98,183	229,095	327,278	30	2
4. Elgin	473	121,088	181,632	302,720	96,002	144,002	240,004	40	1
5. Nairn	195	37,440	87,360	124,800	29,683	69,261	68,943	30	
Total......	3653	826,368	1,511,552	2,337,920	655,165	1,198,396	1,833,561	155	14

DISTRICT VI.—THE WEST HIGHLANDS.

THIS district comprehends the continental parts of the extensive counties of Argyle and Inverness, including a small portion of the eastern coast, in the latter county.

1. ARGYLE.

1. *Situation.*—This is one of the largest counties in Scotland. The continental part of it, (of which we now speak), has Inverness-shire to the north, Perth and Dunbarton to the east; and is washed by the Atlantic Ocean, and Firth of Clyde, on the south and west. One district of it, namely, Cantire, is the nearest to Ireland of any part of Great Britain.

2. *General Features.*—Though penetrated by various inlets of the sea, its general appearance is rough and mountainous, especially in the more northern parts. Even along the sea-coast, there are mountains of the first order, (Cruachan-Ben, for example, which, though washed on one side by the sea, and on the other by Loch-awe, is 1130 yards high, and above 20 miles in circumference.) Between the mountains, however, are interspersed several beautiful and fertile valleys, containing a considerable quantity of land, that is either in cultivation, or susceptible of improvement; though the proportion of arable land is greatest near the sea coast. A number of small streams diversify the scenery; and the river Awe, though it runs but a few miles, discharges into the lake, that bears its name, a very great quantity of water. There is a considerable difference between the several districts of this extensive county, viz. Kintyre, or Cantire, Knapdale, Cowal; Argyle proper, Lorn, with Muckearn and Appin, Glenurchy and Benideraloch; Morven, Ardnamurchan and Sunart, Ardgowar, Mamore and Lochiel. But a short topographical description of each of these will be found in the Appendix, No. 5.

Proprietors, &c.—The Duke of Argyle is the only resident nobleman. The Marquis of Tweeddale and the Earl of Breadalbane are the only other peers who have property in the county. Campbell is by far the most prevalent name among all ranks; and, next to it, those of Cameron, Lamont, Macdonald, Macdougal, M'Laughlan, M'Lean, and Stuart.

4. *Proportion cultivated.*—This, in the able Survey of the county by the Rev. Dr Smith, is estimated at 100,000 Scots acres under the plough, and 30,000 Scots acres of woodland. Converting the whole into English acres, this amounts to 163,970, and is 11.6 parts in 100.

5. *Crops cultivated.*—In the vicinity of Campbelton, wheat, barley, and beans, are raised; but, in the other parts of the county, very little corn of any kind is raised, except bear and

oats. Indeed, owing to the extreme dampness of the climate, especially in autumn, the harvesting of grain is found to be very precarious. This has discouraged the cultivation of corn crops; and, as necessity stimulates the inventive powers of man, has given occasion for a peculiar mode of harvesting both corn and hay, which is in some cases adopted. The corn is hung up on pegs, in separate sheaves or small quantities, which are successively dried in a wooden house composed of deals and spars, that prevent the rain from getting access, but admit the wind freely.—Potatoes are cultivated both successfully and extensively; and, along with fish and milk, they constitute the chief proportion of the food of the common people. Turnips have been introduced long ago, but are not cultivated so extensively as could be wished. The same observation may be applied to artificial grasses; but the humidity of the climate is unfavourable to the making of hay.

6. *Live Stock.*—The cattle of this county are excellent, as they have at all times a sufficient supply of pasture, from the genial mildness of the weather, notwithstanding the frequent rains. Even in winter, snow remains but a short time in the valleys, from their vicinity to the Atlantic, or to some branch or inlet of the ocean.

2. INVERNESS-SHIRE.

1. *Situation.*—This county, which is the largest in Scotland, is bounded by Argyle and Perth shires on the south; by Aberdeen, Banff, Elgin, and Nairn shires, and also by the Moray Firth, on the east; by Ross and Cromarty on the north, and the Atlantic Ocean on the west. A number of the Hebridian islands in that quarter are also attached to it, which will be noticed in the proper place. But it is of the mainland only that we speak at present.

2. *General Features.*—These vary considerably in the different territories into which this extensive county is subdivided. In Badenoch, the Spey runs nearly forty miles through a large, and generally fertile valley, occasionally exposed to inundations, while towering mountains bound the county on the south and south-east. In Lochaber is situated Ben-Nevis, the highest mountain in Great Britain; and, indeed, the whole county, except the valley above mentioned along the Spey, and a small territory on the Moray Firth, near Inverness, is either hilly or mountainous, with a few straths or narrow valleys between the hills, and along its numerous streams. Part of the Coillmore, or great Caledonian Forest, extends for several miles near its boundary with Perthshire; and other extensive woods, particularly near the Spey, tend to vary the scenery. There are also some fine corn farms along that river, in the division of Badenoch, which are divided and enclosed, and secured from inundations by earthern dikes or embankments; and the flat lands in the neighbourhood

of Inverness, are both of great natural fertility, and in a respectable state of cultivation; but, with the exception of these flat tracts, and of the narrow vales along the different streams, the county, in general, is barren, rugged, and mountainous.

3. *Proprietors, &c.*—The Duke of Gordon is proprietor of above 650 square miles in Lochaber and Badenoch. The Earl of Moray also has an estate and a castle, from which he derives his British title of Baron. Lord Cawdor has likewise some property in this county: Lord MacDonald has a vast territory in the islands which are attached to it. The prevalent names are, Baillie, Cameron, Chisholm, Davidson, Forbes, Fraser, Macdonald, Macdonnel, M'Gilvray, M'Intosh, M'Pherson, and Robertson.

4. *Proportion in Cultivation.*—This, including the woodland plantations, is supposed to amount only to 8 parts in 100. The remainder partly consists of good green pasture, and partly heath or moss. But it is hoped that the Caledonian Canal will be the means of adding considerably to the proportion of arable land.

5. *Crops cultivated.*—In the rich country around Inverness, every kind of crop raised in Scotland is cultivated with success. In the other districts, both turnips and artificial grasses are found on the farms occupied by the landed proprietors; but, among the farmers in general, the cultivation is limited to bear, oats, and potatoes. The rearing of cattle is the great object with the smaller tenants of this county, and the raising of corn is only a secondary matter.

6. *Live Stock.*—In this respect, the county is not so far behind. The farmers rear a numerous race of small, but lively and sure-footed horses, large herds of middle-sized black cattle, of an excellent quality, and very numerous flocks of strong, healthy sheep, either of the ancient native kind, or of the Linton breed. A number of goats are found on the mountains, and also many deer, in the district set apart for them as forest, though not enclosed.

No. VI.—THE WEST HIGHLANDS.

NAMES OF THE COUNTIES.	Square miles of land.	Square miles of lakes.	Total square miles.	English acres in cultivation.	English acres not cultivated.	Total land in English acres.	Scots acres in cultivation.	Scots acres not cultivated.	Total land in Scots acres.	Proportion in 100 cultivated.	Number of parishes.
1. Argyle	2200	60	2260	163,970	1,244,030	1,408,000	130,000	926,298	1,116,298	11.7	45
2. Inverness,...	2904	132	3656	448,686	1,709,875	1,858,560	117,881	1,355,632	1,473,513	8.	20
Total...	5104	192	5896	312,655	2,953,905	3,266,560	247,881	2,341,930	2,589,811	9.6	65

DISTRICT VII.—THE NORTH HIGHLANDS.

THIS district consists of the counties of—1. Cromarty; 2. Ross; 3. Sutherland; and, 4. Caithness.

1. CROMARTY.

1. *Situation.*—This county is so much intermixed with that of Ross, as to render it difficult to give any distinct account of its situation. The eastern part of it is situated in a promontory, between the two firths of Moray and Cromarty. The western part, which contains three-fifths of its whole surface, lies on the west coast, at a distance of 50 miles from the eastern, between the western division of Ross, and that of Sutherland. Besides these two, there are several insulated inferior districts; one along the north shore of the Firth of Cromarty, another on the south of the Firth of Dornoch, at Tarbatness, and eleven detached parts in the interior of Ross-shire, or small islands on the western coast. The first Earl of Cromarty, who was a great politician, about the close of the 17th century had the influence to get all his landed property, wherever situated, added to the ancient county; and, within 50 years after, the estate and honours of his family were forfeited. The estate has since been restored to his heirs.

2. *General Features.*—These are extremely different in the different parts of this small county. On the west coast, the aspect of the county is wild, the sea frequently boisterous, and the interior parts barren and mountainous. On the east, are some very fertile spots, washed by the sea, and bounded by Ross-shire. In the interior, it is hilly, and approaches to mountainous. The introduction of sheep-farming will add greatly to the value of the western division; while agriculture spreads along the different patches of this county, (for so they may in general be called), situated near the eastern shore.

3. *Proprietors, &c.*—The only person connected with the nobility, who resides in this county, is the Honourable Mrs Hay M'Kenzie, who represents the Earls of Cromarty. M'Kenzie is the prevalent name both in this and the neighbouring county of Ross. In this county, and in Ross-shire, Mr M'Leod of Cadboll has a considerable estate.

4. *Proportion in Cultivation.*—This is very small on the west coast, but, in the eastern parts of the county, is very considerable, and may be stated at one-eighth part of the whole, or 12½ parts in 100.

5. *Crops cultivated.*—In the eastern division, both wheat and barley are raised by the proprietors, and a few of the principal farmers; in the interior and western parts, only oats and bear. Potatoes are raised universally; turnips and artificial grasses partially, and only on the eastern coast.

6. *Live Stock.*—The native horses and black cattle are rather of a small size, but are generally of good quality; and, in the eastern division, since their winter provision has been improved, their size is increased. The introduction of sheep-farming, which is of a late date, bids fair to triple, or quadruple, the value of the western division of this county. The native Highland, or the black-faced Linton breed, which now begin to displace the native, are best adapted to that wet and cold climate.

2. Ross.

1. *Situation.*—This very extensive county stretches across the whole breadth of the island, having the German Sea on the east, the Atlantic Ocean on the west, Inverness-shire on the south, Sutherland on the north, and the county of Cromarty, in various directions, scattered through it.

2. *General Features.*—On the western coast, and in the interior of the county, it is very hilly, and in some places mountainous. Benwyvis, a mountain of the first order, is in this county. On the eastern coast, there are considerable tracts of flat land, which are in general in a high state of cultivation, and are adorned by the seats and plantations of the resident proprietors. The great number of the firths and bays, that penetrate far into the western coast, both vary the scenery, and are well adapted for fishing stations. There is the greatest difference, both in point of general features, and of natural fertility, between its several subdivisions. These will be particularly mentioned in the Appendix, No. 5.

3. *Proprietors, &c.*—The Earl of Seaforth is the only nobleman who resides in this county; and his surname, M'Kenzie, is by far the most prevalent, possessing about three-fourths of the whole county. The other names are, M'Leod, M'Rae, Matheson, Monro, Rose, Ross, and Urquhart.

4. *Proportion in Cultivation.*—This, notwithstanding the richness of the land near the eastern shore, bears only a small proportion to the total surface; and, including the woodlands, is supposed to be about one-eleventh part of the whole, or $9\frac{1}{9}$ parts in 100.

5. *Crops cultivated.*—In that fertile part of the county, which is called East Ross, every kind of crop found in the Lothians, has been cultivated with success. The chief crops, however, are oats and bear. The climate is too humid for much grain, either in the interior, or on the greatest part of the west coast; and oats and bear are the only sorts of grain that are attempted to be raised. Potatoes are generally cultivated; and over the improved and arable part of the county, both turnip and artificial grasses have come into general use.

6. *Live Stock.*—There is an alert race of small horses, that have been much improved, by selecting the best of their own

sort for breeding. The same observation is applicable to black cattle, whose size, in the eastern division, is greatly increased by good keeping. The native sheep are now seldom to be seen. They have been succeeded by the black-faced Linton, the Cheviots, Southdown, &c. In some parts of the county, sheep-farming is now practised on a great scale.

3. SUTHERLAND.

1. *Situation.*—This county lies to the north of Ross-shire; has Caithness on the east and north-east; and, being surrounded by the ocean in other parts, has a great extent of sea coast.

2. *General Features.*—Vicinity to the sea has not contributed much to its fertility, as the mountains press on all sides, so as to leave only very narrow strips of intervening arable land. The best of this description is on the south-east coast, and of various breadths, yet seldom exceeding two miles. The county in general, and especially on the west and north-west, is the most rugged in the island, being excessively hilly or mountainous, though several streams, which abound in excellent fish, vary the scenery. Their banks are in many places clothed with dwarfish wood, the remains of ancient forests. The different districts are, Sutherland proper, Strathnaver, Assint, Edderachylis, and Ashir, as will be found stated in the Appendix, No. 4.

3. *Proprietors, &c.*—The nobility who possess property, and occasionally reside in this county, are, 1. The Marchioness of Stafford, who is Countess of Sutherland in her own right, and whose ancestors have possessed the earldom for above 600 years. She has two-thirds of the valued rent of the county. 2. Lord Reay, has a very large proportion of territory; so large, indeed, that, in point of extent of surface, he ranks among the principal landed proprietors in Great Britain. The prevalent names, besides Sutherland, are, Gordon, MacLeod, Morison, MacNicol, and Nicolson.

4. *Proportion in Cultivation.*—This is very inconsiderable; the whole arable and productive land, according to a recent survey by Captain John Henderson, being only 5.6 in 100.

5. *Crops cultivated.*—In some straths, or flat lands, on the south-east coast, wheat and beans are raised; but the general crops are bear, oats, and a small proportion of peas. Potatoes are raised universally; but turnips and the artificial grasses are only found on the south-east coast. Flax has frequently been tried, but seldom succeeded.

6. *Live Stock.*—There is a small race of horses, which are found to succeed best by a good selection from themselves. The cattle also are small, but are in high estimation as good feeders, when carried to the southern counties. The Argyle, or West Highland breed, has also been tried with success. The native sheep are small; but the Cheviots have lately been introduced,

and are found to thrive. There are a great many goats; and some red deer are still found on the mountains.

4. CAITHNESS.

1. *Situation.*—This is the last county annexed to this district; and its northern extremity is also the most northerly part of the mainland of Scotland. It is bounded by Sutherland on the west and south-west, but every where else by the sea. The Pentland Frith separates it from the Orkney islands.

2. *General Features.*—On its west, and south-west boundaries, it is barren, rugged, and mountainous; and the mountains occupy a considerable proportion of the surface of the county. Between them and the sea, the great plain of Caithness is extended, which is one of the most level tracts in Scotland. This plain is partly in tillage, partly in green pasture, and partly in moss, that cannot be easily brought into cultivation; but, being destitute of wood, (either natural or planted), and having few hills to shelter it on the north and east, it has a bleak appearance; and is exposed much to the wind from these quarters during the spring and winter. From the vicinity of the sea, on so many points, it has also more rain than other districts in the east coast of Scotland. Yet it exports a considerable quantity of grain, owing to the natural fertility of its soil, and the improvements which have been lately introduced into it. There are two good harbours, viz. Wick, on the east, and Thurso on the north. In the neighbourhood of the latter, much improvement has been effected, by the exertions of the proprietors in that vicinity.

3. *Proprietors, &c.*—The Earl of Caithness is the only nobleman who resides in this county, or is connected with it. He is of the house of Sinclair, a name very prevalent among all ranks. The names of the principal other proprietors are, Dunbar, Fraser, Gordon, Henderson, Horne, Innes, Threipland, Trail, and Sutherland. Most of the landed proprietors have mansions in the county, and reside upon their estates.

4. *Proportion in Cultivation.*—This, notwithstanding the mountainous tract adjoining to Sutherland, owing to the extensive cultivation of the plain of Caithness, and including the productive land in green pasture, is 21 parts in 100.

5. *Crops cultivated.*—Wheat has been introduced, likewise turnips and artificial grasses; which two last are spreading fast. Bear and oats are the general crops. Potatoes are cultivated universally, and flax occasionally.

6. *Live Stock.*—There is a numerous breed of small alert horses. The cattle also are small, but very hardy. The same may be said of the native sheep; but the Cheviots have been tried, and prosper well. It was in this county that the Cheviot breed was first introduced into the northern districts—a plan so likely to augment the value of that part of the kingdom.

No. VII.—THE NORTH HIGHLANDS.

NAMES OF THE COUNTIES	Square miles of land.	English acres in cultivation.	English acres not cultivated.	Total land in English acres.	Scots acres in cultivation.	Scots acres not cultivated.	Total land in Scots acres.	Proportion in 100 cultivated.	No. of parishes.
1. Cromarty...	256	20,480	143,360	163,840	16,237	113,659	129,896	12.5	4
2. Ross.........	2069	120,378	1,203,782	1,324,160	95,439	954,388	1,049,827	9.1	25
3. Sutherland..	1754	63,045	1,059,515	1,122,560	49,984	840,009	889,993	5.6	13
4. Caithness...	687	92,333	347,347	439,680	73,204	275,386	348,590	2.1	10
Total......	4766	296,236	2,754,004	3,050,240	234,864	2,183,442	2,418,306	9.7	52

DISTRICT VIII.—THE EBUDES, HEBRIDES, OR WESTERN ISLANDS.

THERE are few districts, into which Scotland is divided in this arrangement, of more importance, than the Western Islands. Their value is not to be estimated merely from present circumstances, but from the vast improvements of which the district is susceptible—in its agriculture, its manufactures, and its fisheries. The Ebudes comprehend all the islands that are situated to the westward of the Mainland of Scotland; and include the isles of Bute and Arran, with their dependent islets in the Firth of Clyde, which are situated between Kintyre and Ayrshire. Even the two small islands, called the Cumbraes, belong to the county of Bute, though immediately adjoining to Ayrshire, and consequently form a part of this district.

The Ebudes belong to four different counties. Besides the isles of Bute and Arran, which, with their dependent islets, form a distinct county by themselves, they comprehend an area of only 165 square miles, of which *Bute* and its dependent islets amount to 44, and *Arran with its islets* to 121, including some lakes. The other islands are attached to the counties of Argyle, Inverness, Ross and Cromarty. They amount to nearly 300; but the principal isles, with their extent in square miles, shall here be ranked under the shires to which they belong.

Hitherto the measures of counties and districts have been computed from Mr Arrowsmith's map. But as he had not such good data for engraving the Hebrides, as for his map of the Mainland; and as both Dr Smith's Survey of the Argyllshire islands, and Mr Macdonald's Survey of the Hebrides, give different measurements of the extent, from what was the result of a careful measurement of Arrowsmith's map, we shall take the average of the three measures for the islets attached to Argyll, and the medium between Mr Macdonald and Mr Arrowsmith, for the contents of the other Hebrides.

Table of the Extent of the Hebrides, including the Fresh Water Lakes.

		Square Miles.
I. County of Bute,		165
II. Islands attached to Argyll.		
Mull, with its depending islets	391	
Isla and Gigha	313	
Jura, Colonsay, and Oronsay	118	
Tyree and Coll	53	
Rum, Canna, and Muck	51	
Lismore, and Islands of Lorn	24	
Total in Argyle,	—	950
III. Islands belonging to Inverness-shire.		
Sky, Raaza and Ronay	652	
Harris and islets	197	
North Uist	127	
South Uist	118	
Benbecula and islets	43	
Barra and islets	31	
Eigg and other small isles	41	
Total to Inverness-shire	—	1209
IV. Islands belonging to Ross and Cromarty.		
To Ross belongs Lewis	570	
And a few islets on the coast of Ross and Cromarty	18	
Total to Ross and Cromarty	—	588
Total extent of the Hebrides		2912

1. *Situation.*—These islands are situated between 55° 17′, and 57′ 58″ north latitude, and between 4° 58′, and 7° 48′ west longitude. The most southerly point is the small island of Sanda, and the most northerly point is in the island of Lewis. The most easterly point is in the isle of Cumbraemore, and the most westerly is the small isle of Mingalay, near Barra-head. These are the general outlines of their situation; to which the only exceptions are the small islands of St Kilda and Broreray, which are 48 miles west of South Uist, and the islets of Suliskir and Rona, about 30 miles north of the Butt of Lewis.

2. *General Features.*—With a few exceptions, the aspect of these islands is barren and hilly, and in several of them mountainous. (The exceptions will be found in the topographical description contained in the subsequent article, Appendix, No. 5.) In the interior, there are many impassable ravines, and deep water courses, that are alternately overflowing, or altogether dry, whilst a great proportion of the surface consists of heath and dreary morass, with very little wood to vary the scenery. On the other

hand, there is a considerable proportion of fine green pasture, more especially along the margins of the fresh water lakes, and the still more numerous bays and inlets of the sea, which penetrate deeply in several of these islands; and in the vicinity of which the soil is cultivated, and the inhabitants principally reside. The particular features of every separate island worthy of notice, will be found in the Appendix, No. 5.; for no general description can apply to the whole.

3. *Proprietors, &c.*—The Duke of Argyll has a considerable property in Mull, Tyree, and a few of the islands of Lorn. The Duke of Hamilton derives his oldest title of Earl, from the island of Arran, of which he is the principal proprietor. The Marquis of Bute is also proprietor of the greater part of the island of Bute, whence he derives his title both of Marquis and Earl, and where he has an elegant mansion at Mount-Stewart, in the southern extremity, within 200 yards of the sea, highly ornamented with thriving wood, and in full view of the Clyde. Lord Macdonald, and Lord Seaforth, are also extensive proprietors, and occasionally reside; and besides the cadets of these two ennobled families, there are both the chiefs and cadets of the populous clans of Macleod, Maclean, Macaul, Macalister, Mackinnon, and Macquarrie. These are prevalent names in all ranks. The only considerable proprietor from the Lowlands, is Mr Hume of Harris.

4. *Proportion of productive land, or of land in cultivation.*—This is extremely different in different islands. In the isle of Bute, and in the Cumbraes, it may amount to one-half; in Arran, to only one-fifth;—the average on both islands being 27.6. In the islands of Argyllshire, it varies from one-half of the whole surface, or 50 in 100 in the most fertile, viz. Lismore; 45 in Canna, 40 in Colonsay, 35 in the isles of Lorn, 32 in Coll, 30 in Tyree and Gigha, 25 in Islay, to 8 in Mull, 7 in Jura, and 6 in 100 only in Rum. At an average of the whole islands belonging to Argyllshire, it is 18 in 100. In the islands attached to Inverness-shire, it also varies from two fifths, or 40 in 100 in the island of Eigg, and 20 in North and South Uists in Benbecula, to 12 in Skye and Raaza, and even to 7½ in Harris; the average being 13 in 100 *. And in the island of Lewis, which belongs to Ross-shire, it is only that lowest proportion, or 8.4 per cent., either arable or productive.

5. *Crops cultivated.*—Wheat is raised in the two fertile islands of Bute and Isla. In these, also, barley, turnips, and the sown grasses, are cultivated with success. But bear or big is the species of barley that is best adapted to these islands, and is generally raised. It seems to be a favourite crop with the people in general; and they give it, not only all the home-made manure,

---

* These proportions include the green pasture, and other productive land, as well as the arable.

but also a large proportion of sea-weed. It springs quickly, ripens soon, and the returns are very great. On many of the islands, it is found to be far more profitable than oats. Yet in several others, for example in Skye, oats are chiefly raised, with only a proportion of bear. Potatoes are universally cultivated. A proportion of flax is also found in Skye, and some of the other islands. Turnips and artificial grasses are gaining ground, and are cultivated by several of the proprietors, and principal tacksmen, in Skye and Lismore, as well as in Coll, where the principal proprietor has of late raised even wheat with success. It has been remarked, that in Skye, the use of turnip has been found to contribute much to the health, as well as the growth of the young cattle, and to banish that most destructive distemper, the black spald. In the gardens and kail-yards, most of the esculent vegetables, cultivated on the Mainland, are raised with success; as are also the lesser fruits, and a tolerable proportion of apples, pears, &c.

6. *Live Stock.*—This consists of cattle, horses, sheep, goats, and swine. Of cattle, the number is considerable, amounting to about 120,000. They are lively and well-shaped animals, but in general small, weighing from 12 to 16 stones Amsterdam, or from 210 to 280 neat pounds avoirdupois. They swell out, however, very much, when transported to warmer winter quarters, and to better food; while their beef, when they are fattened, still retains its quality, and is the most delicate in Britain. In some of the islands, they are originally of a larger size; for example, in Isla, Skye, and Mull, but particularly in Colonsay. There, the general size of cattle, when full grown, weigh 30 stone Dutch. Their form is also remarkably elegant, and finely proportioned; indeed, the cattle of these islands, in general, have of late been much sought after, as a cross to improve the breeds on the Mainland. The number of horses is computed to be 20,000. This species of stock is not thought so profitable, yet numbers of them are annually exported to the other districts of the United Kingdom. They are in general small, alert, and hardy. Of sheep, the number seems to be about 104,000, chiefly of the small native breed, with fine wool. Of late, some of the coarse-woolled Tweedale breed, and also of the Cheviots, have been introduced. These numbers are extracted from the late Mr Macdonald's valuable Survey; adding, from the Statistical Accounts, that portion which was not within his mission.

Two peculiar circumstances, respecting the food of the live stock, deserves to be mentioned. Among the other natural grasses, both red and white clover are found in several of these islands, in great luxuriance, particularly in the two Uists, and Barra. These afford rich pasture for the cattle in summer, but do not stand the winter, and are late of rising in the spring, more especially in that long range of islands, called the Long Island, which includes Barra, the two Uists, Benbecula, Harris, and Lewis. There, for several months, their principal sustenance is derived from the sea-shore, by feeding on the Alga Marina that is driven on shore by the boisterous billows of the Atlantic. To obtain this food, the cattle *come instinctively* from the distance of two or three miles, when the tide recedes. These two extremes of good and bad pasture, in the strongest manner call upon the natives, not only to cultivate the common turnip, but to raise rutabaga, or Swedish turnip, which is so valuable as spring food for cattle.

It may be added to this account of live stock, that goats and swine are abundant, as well as game and domestic poultry; and that there are neither rats nor mice on some of the islands, but that both foxes and eagles are found in most of them.

No. VIII.—THE WESTERN ISLES.

NAMES OF THE COUNTIES.	Square miles of land.	English acres in cultivation	English acres not cultivated.	Total land in English acres.	Scots acres in cultivation.	Scots acres not cultivated.	Total land in Scots acres.	Proportion in 100 cultivated.	No. of parishes.
1. Bute...	161	29,440	73,600	103,040	23,341	58,352	81,693	28.6	5
2. Argyll	929	107,020	487,540	594,560	84,848	386,534	471,382	18	10
3. Inverness.....	1150	95,680	640,320	736,000	75,857	507,662	583,519	13	11
4. Ross & Cromarty	560	30,117	328,283	358,400	23,877	260,271	284,148	8.4	4
Total...	2800	262,257	1,529,743	1,792,000	207,923	1,212,819	1,420,742	14.6	30

DISTRICT IX.—THE NORTHERN ISLANDS.

THESE are divided into two principal ranges; the islands of Orkney, and the islands of Zetland, or Shetland.

1. THE ORKNEY ISLANDS.

All of these are to the north of that part of the Mainland of Scotland, from which they are separated by the Pentland Firth, which is above six miles in breadth where narrowest. Owing to their being surrounded by the sea, they enjoy a more temperate climate than could be expected in so high a latitude; the range of the thermometer being far less than in Middlesex, seldom rising above 68° at noon in summer, or falling below 23° in winter. Though these islands do not rank high in the scale of agriculture, yet an improved husbandry has been introduced into several of them; and both manufactures and commerce are gradually extending. The manufacture of plaiting straw was introduced about ten years ago, and brings in from L.4000 to to L.5000 per annum, which is chiefly earned by females; and the manufacture of kelp produces L.50,000, in good seasons, and in general L.40,000. The exports from these islands are, at an average, about L.20,000 for native produce, from Kirkwall alone. The fisheries likewise are a source of wealth to the inhabitants. These short notices are all that, in this place, can be taken of these particulars; but will serve to satisfy the reader, that the state of these islands is not unworthy of his attention.

1. *Situation and Extent.*—In Captain Donnelly's chart, they are laid down between 58° 44′, and 59° 24′ north latitude, and 2° 0′, and 3° 14′ longitude west from Greenwich. But as this chart had not the authority of any survey, it is safer to adhere to M'Kenzie's Nautical Survey of Orkney, done from actual observation; and, according to this, Orkney lies between 58° 43′, and 59° 34′ north latitude; extending 1′ farther south, and 10′ farther north, or 11 geographical miles, farther than Captain Donnelly had stated it. This agrees pretty nearly with the map of Orkney and Zetland, contained in a memoir that accompanies Arrowsmith's map, which does not, and from their position could not, easily contain these islands. They are much indented with inlets of the sea, which renders it difficult to measure their extent correctly. The following Table, therefore, without pretending to mathematical accuracy, is given as an approximation; and contains, along with the names of the most considerable islands of Orkney, their greatest length, greatest breadth, and measure in square miles.

	Length.	Breadth.	Square Miles.
1. Pomona, or the mainland	28	14	212
2. Hoy, south-west of the mainland	15	6½	56
3. Sanda, on the north-east of ditto	14	3	19
4. S. Ronaldsa, on the south	8	7	24
5. Westra, on the north	11	7	24
6. Stronza, on the north-east	7	6	16
7. Eda, north by east	8	4	14
8. Ronsa, on the north	4½	4	12
9. Shapensha	5½	3½	10
10. N. Ronaldsa, the most northerly	4½	1½	6
11. Papa Westra, on the north	5	1½	6
12. Flota, on the south	3½	1½	3½
13. Burra, on the south	4	2	3
14. Eagleha	3	1½	1½
15. Græmsa, on the south	1½	1	1
14 other small inhabited isles, at an average 1 square mile each			14
38 Holms or grass islets at ½ mile each			19
67 islands, containing			440

From the Statistical Account of the parishes, it appears, there are many fresh water lakes among these islands. Estimating these at 15 square miles, the whole land is only 425 miles.

2. *General Features.*—The aspect of Orkney is hilly, not mountainous, with a considerable proportion of heath. Some of the isles, however, more especially Papa Westra, Papa Stronsa, Sanda, and the most remote of the whole, N. Ronaldsa, are both flat, and comparatively fertile. The whole abound in that beautiful scenery, that is produced from an intermixture of sea and land views, and want nothing but wood to enliven the prospect. The Flow of Scalpa, in particular, is very picturesque, and has been the admiration of every traveller.

3. *Proprietors, &c.*—The only nobleman connected with these islands, is Lord Dundas of Aske. He is not the superior, (as the whole county holds of the Crown); but being *grantee* to the Crown-rents and feu-duties, and *lessee* of the Bishop-rents and feu-duties, he draws a considerable revenue from them, as coming in place both of the Crown and the Bishop. These islands were, at a remote period, the patrimony of the family of Sinclair, who were then princes of Orkney, and whose name is still very common in Orkney. The other prevalent names are, Baikie, Balfour, Craigie, Fea, Honyman, Laing, and Traill. It may be observed, that most of these names are originally from Norway, none of them Celtic; for Gaelic never was the language of Norway or Orkney. Since the inhabitants ceased to use the Norse, they have, for a very long period, spoken only the English tongue.

4. *Proportion in Cultivation.*—This is limited to the ground along the numerous inlets of the sea; and, from the best data that can be procured, chiefly from the Statistical Accounts of the different parishes, is 9 in 100.

5. *Crops cultivated.*—Wheat has been tried, and found to succeed. Turnips and the artificial grasses have been also introduced, and prosper very much; but bear, oats, and potatoes, are the general crops; and in some places a proportion of flax is raised. The returns of bear and oats are good, when the ground has been properly prepared; but this is not often the case, as the husbandry of the common farmer is very defective. In the gardens of the gentlemen, are to be found almost every culinary vegetable that is known in the mainland; and all the lesser fruits, when sheltered by walls, come to sufficient size and maturity. Forest trees are also raised in the same way like exotics; but hardly a single shrub, except where protected by walls, is to be seen. One single production, namely, the artichoke, is worthy of being noticed; because it requires so much culture to be raised with success on the mainland. It here grows without culture, in some old and neglected gardens in the island of Hoy, and islet of Lambholm, which has made strangers suppose that it was indigenous, or grew spontaneously. The general mildness of the

winter months, is no doubt the reason of its continuing to grow in places where it was once cultivated; for it rarely happens, that either snow or frost remain long in these islands.

6. *Live Stock.*—This consists of black cattle, horses, sheep, and swine, all of a diminutive breed. Horses are sold in considerable numbers to the inhabitants of Caithness. The cattle, though small, and not appearing so well shaped, owing to their leanness in winter or spring, yet are in high estimation in Forfarshire, as are also those of Zetland, both being the best feeders of any breed that comes from the northern counties. The sheep are rather long-woolled; part of the same fleece is very fine, and the rest is very coarse. Their mutton is reckoned extremely delicate. Both sheep and cattle are highly improveable by proper crosses. The sheep do not always receive the mild treatment that they deserve. The swine roam at large; and though of small size, yet, by grubbing up whatever falls in their way, are very destructive animals. Rabbits are in such plenty, that 36,000 of their skins have been sold in a single season from the port of Stromness alone. Domestic poultry are numerous; and both turkey and pea-fowls are reared by the proprietors and principal tacksmen. Swans, and the various tribes both of geese and ducks, are astonishingly numerous. There are no bee-hives in these islands, though wild bees are found in several places. Tradition reports, that the only bee-hive ever brought to this county, was destroyed by an ignorant boy, who closed up its mouth, lest the bees should flee away to Angus, whence they had come.

2. THE ZETLAND, or SHETLAND ISLANDS.

THESE islands are situated to the north-east of the Orkneys. The nearest line between them, according to Captain Donnelly's chart, is from the north point of North Ronaldsay in Orknay, to Fitsill-head on the north-west point of Zetland, a distance of 51 miles. They are, like Orkney, distinguished for the temperature of their climate, the heat never being great in summer, nor the cold in winter. Snow seldom lies long, and is never above three or four inches deep. In none of them is agriculture in a forward state, though the turnip husbandry has been introduced with every prospect of success; and a smaller proportion of the soil is in cultivation, than in any other part of the British dominions. But from the fishery their wants are chiefly supplied, whilst a considerable quantity of fish remains for exportation. The manufacture of kelp has been introduced, and bids fair to be a profitable article of manufacture. Three-fourths of their exports, which amount to L. 35,000 on an average, are derived from the sea. It may be added, that the inhabitants both of Orkney and Zetland, are highly esteemed both for their moral character and social virtues; that the latter, though in the northern extremity of the British dominions, are very fond of dress, and great tea drinkers; and that all the inhabitants of the Western and Northern Islands, indulge occasionally in the pleasures of the bottle. They commonly prefer the navy to the army, and have been generally esteemed for their natural address, good seamanship, and personal bravery. They endure the greatest fatigue and privations, are obedient to their superiors, and fearless of danger. These general observations, it is hoped, will not be thought altogether foreign, if they procure respect for the inhabitants of these remote islands, from persons who live in a happier climate, and practise a more improved system of agriculture.

1. *Situation and Extent.*—The Zetland isles are situated between 59° 58′, and 60° 52′ of north latitude, and between 0° 20′ and 1° 48′ of west longitude. This, however, is exclusive of the Fair Isle, which lies about 30 miles south by west of Sumbrugh-head, on the south point of the Mainland, and also of the Foul Isle, which lies at the same distance due west from the point of Wulls on the same large island. The same circumstances which prevent the giving of a correct measurement of the Orkneys, concur to increase the difficulty of ascertaining the true area of Zetland, with this additional inconvenience, that the principal island, called by way of eminence the Mainland, and containing above two-thirds of the extent of the whole, is so much indented by inlets, that there is no part of it, which is above two miles from the sea. The following Table, which aims only at an approximation to the truth, contains the names of pretty nearly the greatest length, greatest breadth, and the number of square miles of the 12 largest islands, which are fifteen-sixteenths of the whole, and the supposed extent of the remaining islands, which are too inconsiderable to be mentioned separately.

	Breadth.	Length.	Sq. Miles.
1. The Mainland	60	25	557
2. Yell, N. by E. of the Mainland	20	15	150
3. Unst, the most northerly	9½	7	40
4. Bressay, E. from do. including Ness	7	4	18
5. Whalsay, N. E.	8	2½	16
6. Fetlar, S. from Unst	5	3½	14
7. Burra, W. of Mainland	5	1½	6
8. House adjacent to Burra	5	1	4
9. Trondra, adjacent to House	2½	1¼	3
10. Papa Stour, W. of Mainland	3	2	5
11. Fair Isle, 29 miles S. by W. of do.	4	1¾	6
12. Foula, or Foul Isle, 28 miles W. of do.	4	1¾	6
22 other inhabited isles, at 1½ mile each			33
66 uninhabited holms, supposed in all			22
100 islands, extending in all to			880
—besides several skerries or bare rocks.			
But the fresh water lakes in these islands are supposed to amount altogether to			25
This leaves for the number of sq. miles of land, only			855

2. *General Features.*—These may be stated, upon good authority, in the following quotation from Dr Edmondston's recent publication:—"The general appearance is by no means attractive. The coast is rocky and unequal, and the hills bleak and mossy. More closely examined, this country presents many interesting scenes, partaking both of the tranquil and the wild. The latter, however, greatly predominate; and while spots of cultivated retirement are comparatively few, the romantic beauties of simple nature are abundantly displayed. Every where may be seen rocks of immense size standing in the sea, and in some places at a great distance from the land. Some are perforated by magnificent arches, of great beauty and regularity; in others there are deep caverns, and subterraneous recesses: Some are cleft in two nearly to the bottom; and others present acuminated tops, exhibiting an endless variety of form and appearance." It is scarcely necessary to add, that with many high hills, there are no mountains, Rona excepted, of any considerable magnitude; and that there is no wood or shrub in these islands, without the walls of a garden.

3. *Proprietors, &c.*—Lord Dundas of Aske is proprietor of the lands which formerly belonged to the Bishop, and draws both the Crown and the Bishop's rents. His power and influence are greater here than in Orkney, because Zetland is not as yet represented in Parliament. This, however, is not occasioned by their want of title; for the proprietors in general hold of the Crown; but by some obstacles in splitting the cumulo valuation of the whole district, which it is expected will soon be removed. When these obstacles are removed, such of the proprietors as shall have L. 400 Scots valuation, will then be entitled to vote with the freeholders in Orkney. Zetland is a part of that county, and subject to the jurisdiction of the same sheriff-depute, who has a substitute resident in these islands. The prevalent names of the proprietors, are Bruce, Gifford, Hunter, Mowat, Nicolson, Scott, Sinclair, and Umphray.

4. *Proportion in Cultivation.*—This is much less than in Orkney, and is estimated at 33 square miles, or only 4 in 100 acres.

5. *Crops cultivated.*—It deserves here to be mentioned, that within these few years, the Reverend Mr Mitchell, minister of Tingwall, has cultivated wheat and turnips, and raised the sown grasses very successfully. This may form a new era in the agriculture of Zetland; for there are several fertile vales in North Mavin, Tingwall, Dunross, and Ness, and a spirit of improvement is spreading fast. In Whalsay, for example, very great exertions have been made by the proprietor of Symbster; and it is only by the proprietors taking the lead, or assisting, as well as encouraging the tenants, that improvements can be carried on, to any extent, in such a country as Zetland. The general crops at present are bear, oats, and potatoes in the fields; and

turnips, carrots, cabbages, and other esculent roots in the gardens, including artichokes, which, though not indigenous, grow here in old and deserted gardens, without annual culture; a most decisive proof of the moderate temperature of the climate. There are also various small fruits and flowers; but nothing that deserves the name of wood, except the mountain ash and the willow, which are both so extremely diminutive in size, as scarcely to merit the name of shrubs.

6. *Live Stock.*—The horses are remarkably small, but hardy, supposed to amount to 10,000. The black cattle, though small, are of excellent quality, and may amount to 27,000; and sheep to 75,000. The wool of the sheep is remarkably fine; but every fleece has a proportion of very coarse wool, or rather hair, which renders the stapling of the wool a difficult operation. Stockings from the finest wool are worth 30 shillings the pair, and even upwards; whilst others, made from the same fleece, are sold at 5 pence. The proportion of fine wool is not above one seventy-second part of the fleece. The sheep here, as in Orkney, are not treated so kindly as they deserve. The number of swine is also very considerable; but not being confined, they are very mischievous. The other animals are rabbits, otters, and seals. Neither hares, foxes, partridges, nor muirfowl, are found in these islands; but plover and snipe, with immense numbers of the aquatic tribe, are to be met with every where; and every brook teems with trout and eels, so that no where in Britain has the sportsman a more ample field of amusement, as far as these are accounted valuable. Here, as in Orkney, agriculture, and even the feeding of live stock, is but a secondary object. For the climate is very ungenial, though temperate. The winter is long, and the weather frequently boisterous; and not only high winds, but thunder and lightening are very prevalent; and although there seldom is much frost or snow, yet the season is far advanced, before vegetation makes any progress. This is the great cause both of the imperfect agriculture, and of the diminutive size of the live stock, in these northern islands.

IX.—NORTHERN ISLANDS.

NAMES OF THE COUNTIES.	Square miles of land.	Square miles of lakes.	Total of both in miles.	English acres in cultivation.	English acres not cultivated.	Total land in English acres.	Scots acres in cultivation.	Scots acres not cultivated.	Total land in Scots acres.	Proportion in 100 cultivated.	No. of parishes.
1. Orkney	425	15	440	24,480	247,520	272,000	19,409	196,242	215,651	9	17
2. Zetland	855	25	880	21,888	525,312	547,200	17,353	416,485	433,858	4	1
Total....	1280	40	1321	46,368	772,832	819,200	36,762	612,727	649,489	5.7	2

GENERAL VIEW OF THE NINE AGRICULTURAL DISTRICTS OF SCOTLAND.

DISTRICTS.	Square miles of land.	English acres in cultivation.	English acres not cultivated.	Total land in English acres.	Scots acres in cultivation.	Scots acres not cultivated.	Total land in Scots acres.	Proportion in 100 cultivated.	No. of parishes.
I. S. E. Lowlands........................	1903	684,980	532,940	1,217,920	543,068	422,530	965,598	56.24	131
II. S. or Pastoral....	3108	536,536	1,452,584	1,989,120	425,379	1,151,644	1,577,023	27.	106
III. S. W. Manufacturing;..............	2434	723,116	834,644	1,557,760	573,304	661,726	1,235,030	46.2	116
IV. Central................................	4552	1,354,934	1,558,346	2,913,280	1,074,226	1,235,495	2,309,721	46.5	219
V. N. E. Lowlands........................	3653	826,368	1,511,552	2,337,920	655,165	1,198,396	1,853,561	35.4	149
VI. West Highlands......................	5104	312,655	2,953,905	3,266,560	247,881	2,341,930	2,589,811	9.6	45
VII. North Highlands....................	4766	296,236	2,754,004	3,050,240	234,864	2,183,442	2,418,306	9.7	52
VIII. Western Isles........................	2800	262,257	1,529,743	1,792,000	207,923	1,212,819	1,420,742	14.6	30
IX. Northern Isles........................	1280	46,368	772,832	819,200	36,762	612,727	649,489	5.7	29
Total..................................	29,600	5,045,450	13,900,550	18,944,000	3,998,572	11,020,709	15,019,281	26.6	877

N. B.—Besides the above measures of land, there are 638 square miles of fresh water lakes; making the total extent in land and lakes 30,238 square miles.

APPENDIX,—No. IV.

IT is proposed in this Number of the Appendix, to give some account, 1. Of the antient territorial districts and natural subdivisions of the Mainland of Scotland; 2. A description of the Western Isles; and, 3. Of those of Orkney and Zetland.

BRANCH I.

ANTIENT TERRITORIAL DISTRICTS AND NATURAL SUBDIVISIONS OF THE MAINLAND OF SCOTLAND.

These are commonly limited by natural boundaries, such as ridges of hills or mountains, branches of the sea, and in some cases by rivers or waters. This last mode of separation is seldom to be met with; for more generally the different subdivisions or districts have a principal stream in the middle, to which their respective territories shelve inwards from both sides. In the south of Scotland these distinct valleys are commonly called *dales* where there is an *arable* valley, and *waters* where the banks press close upon the rivers or smaller streams. In the Highlands and north of Scotland, the term *strath* denotes also an *arable valley*, glen, or narrow vale, antiently used *only*, and still *chiefly* for pasture; and the *corry*, (the same with *quarry*), a still narrower opening, with a small stream in the middle, and rocks or large stones on each side, with *very little* grass, and *no arable* land. In the following description of these, it is proposed chiefly to elucidate the local situation and a few of the leading features; but it is not meant to enter minutely into particulars.

DISTRICT I.

1. BERWICK BOUNDS.—This tract of country attached to the town of Berwick, extends three miles north by the sea coast, and three miles and a half west by the Tweed, with an irregular boundary line, at nearly the like distance, on the north-west between the sea and the river. It comprehends, in all, an area of about 5000 acres, including the site of the town, and is in general either rich well cultivated land, or good green pasture.

2. TIVIOTDALE—is that part of the county of Roxburgh which shelves on each side to the Tiviot, or to those numerous smaller streams which fall into that river. It forms about four-fifths of the shire, and is a remarkably pleasant district, richly embellished by the mansions of the proprietors, and artificial plantations; and the arable lands are in a state of high cultivation. It now gives the title of Duke to a branch of the Royal Family.

Liddisdale, another dale in this county, which has already been described in the account of Roxburghshire.

3. THE MERSE,—a very fertile and highly cultivated district, lies on the north side of the Tweed, chiefly in Berwickshire. It is about 30 miles long from east to west, and about 10 miles broad at an average. It has been called the cradle of Scottish husbandry, being the first extensive district that set an example of spirited improvement; and it is still remarkable for energetic cultivation and wealthy husbandmen. Part of it is included in the county of Roxburgh, namely, the parishes of Makerston, Smallholm, Kelso, Edham, and Stitchil.

4. LAMMERMUIR,—the most northerly part of Berwickshire, stretching across the whole breadth of it from Soutra hills to the sea. It is a mountainous tract, with a few strips of arable land by the sides of its numerous rivulets; and the rest is heath and hill pasture. The whole may extend over 250 square miles, of which, part is in the county of Haddington. The tract of moorish land, not under the dominion of the plough, is yearly decreasing in extent, owing to the exertions of the husbandmen, who are encroaching upon it, as the soil is found not unfertile where the means of improvement can be applied.

5. LAUDERDALE,—the western subdivision of Berwickshire, lies on a gentle slope from north to south on each side of the Leader water, and is about 15 miles long, and from 2 miles to 8 in breadth: the lower part of it is in the county of Roxburgh. It is not remarkable for fertility; but having several seats of the proprietors amid woods and well-cultivated lands, the whole has a cheerful appearance. The Earl of Lauderdale, of the antient house of Maitland, has considerable property in this valley; and his chief place of residence, Thirlestane Castle, a venerable pile, is situated in the middle of it, in the vicinity of Lauder, amid some very large and thriving plantations. The Cowdenknows, famed in Scottish poetry, is also in this dale.

6. LOTHIAN, or the Lothians, provincially *Lowdon*, is one of the most fertile provinces in Scotland.—It extends 50 miles in length from east to west, along the south shore of the Frith of Forth, and is from 10 to 15 miles broad, and may be stated at about 640 square miles. Of this extent, three parts in four are arable and in constant cultivation, and rented at perhaps not less on an average than forty shillings the Scotch acre. There is nowhere else in Scotland, nor perhaps in Britain, a district of the same extent, lying contiguous, that is either better cultivated, or abounds more in rural decoration. It is subdivided into the three counties of Linlithgow, Edinburgh and Haddington, commonly called the three Lothians, but incorrectly, as the two last counties include other territory, distinct from Lothian. It gives the title of Marquis to the Fernihirst branch of the antient potent Border family of Kerr, which now has its principal place of residence at Newbattle, six miles from Edin-

burgh. A great proportion of the nobility of Scotland reside in Lothian, either constantly or occasionally.

7. GALLA-WATER,—a fine pastoral, but hilly country, chiefly in the county of Edinburgh, about sixteen miles in length, and from 2 to 6 miles in breadth, remarkable for rich pasture and a good breed of healthy and hardy sheep. It has also a considerable portion of arable land on the banks, or haughs, of the Galla and other streams, that produces good crops of bear, oats, turnip and clover. It is situated from 14 to 30 miles south-east of Edinburgh. *Stow* is almost the only village in the whole district, excepting Gallashiels, which being near the banks of the Tweed, is more generally reckoned to be in Tweeddale.

8. KERSE or CARSE OF FALKIRK,—a remarkable rich territory of alluvial land in Stirlingshire, situated between Falkirk and the Frith of Forth, and extending over perhaps 20,000 acres.

DISTRICT II.

1. TWEEDDALE,—in a larger sense, is the whole country shelving towards the Tweed on both sides, from its source to the sea. But it is generally understood as being limited to the county of Peebles, being a synonymous term for that pastoral district. It gives the title of Marquis to a branch of the family of Hay, which succeeded by intermarriage, some centuries ago, to the Frasers, who at that time had much territory and power in this county.

2. THE FOREST,—the antient name of the county of Selkirk, where very little wood now remains to mark its former designation. The plaintive song of *The Flowers of the Forest*, a modern composition, alludes to the loss this district sustained in its young warriors, who were nearly all cut off at the fatal battle of Flodden, where they behaved with singular bravery. A few however returned in safety, bringing with them an English standard, which is still preserved in the town of Selkirk.

3. ESKDALE,—a valley of considerable extent in Dumfriesshire, situated to the eastward of Annandale on both sides of the river Esk, which flows 24 miles in a southerly course until it passes the English border, and then running six miles further towards the west, falls into the Solway Frith. This is chiefly a pastoral country, but contains also some very rich holm land, with much natural wood and many plantations. It is divided, in Scotland, into four parishes, the greater part of which is the property of the Duke of Buccleuch, and who, at Langholm, the chief place of note, has an elegant mansion where he occasionally resides.

In this division, Ewesdale may be comprehended, containing one entire parish, about 8 miles long and 5 miles broad. It is a beautiful pastoral district, with a few holms of arable land along the water side, and by far the greater part of it consists of high green hills on either hand.

4. Annandale,—a fertile valley in Dumfries-shire, extending 30 miles from north to south, and from 10 to 20 miles in breadth. The water of Annan flows in the middle of this territory, which has Nithsdale on the west, Eskdale on the east, the high mountains of Hartfell on the north, and the Solway Frith in full view on the south. It is thus favourably situated, and is in fact one of the warmest districts in Scotland. It gave the title of Marquis to the chief of the Johnstons, who had a great property here, now inherited by the Earl of Hopetoun, who has a stately mansion near the higher part of the Dale, at Raehills. The Earl of Mansfield, as representing the Murrays, antient Earls of Annandale, has large possessions in the lower part of the valley near Comlongan, their antient place of residence.

5. Nithsdale,—the most westerly subdivision of the shire of Dumfries. It is situated on both sides of the Nith, as that river runs from north-west to south-east, not only the whole length of the county, but several miles beyond it through Ayrshire. It also comprehends a part of the county of Kirkcudbright, whose waters flow into it from that quarter. The upper part of this dale is chiefly a pastoral country: but, lower down, where the valley widens considerably, there is much fertile arable land in cultivation, which bears every kind of crop. The whole extends to above 500 square miles; and is richly embellished with woods and plantations around the seats of its numerous residing proprietors. It formerly gave the title of Earl to the chief of the Maxwells, who still enjoys great possessions; but the honours have fallen through forfeiture.

6. Galloway,—a considerable province in the southwest of Scotland; comprehending anciently a part of Ayrshire, and the entire counties of Wigton and Kirkcudbright, except that part of the latter county (about 50 square miles) included in Nithsdale. It is in general a hilly country, except in the vicinity of the sea, which bounds it on the south-west; or by the sides of its numerous streams, where there is a considerable extent of arable land; or on the many low-swelling knolls that are very susceptible of cultivation; and they are indeed well cultivated, wherever access can be had to lime as an original cause of fertility. Galloway has long been remarkable for an alert breed of small-sized horses, excellently adapted to the road, and well known from their name, which they take from this province. They are supposed to be of the original breed of British horses, of which a similar species still remains among the mountains of Wales. There is also a remarkable kind of cattle that is almost peculiar to the country. They are polled, or hornless; and as they have a great tendency to fatten, they are in much request with the English drovers. Galloway still gives the title of Earl to

a branch of the House of Stewart. Before its division into different counties by King Robert Bruce, it belonged chiefly to John Baliol, his competitor for the Scottish diadem.

7. THE MACHERS,—a territory in the county of Wigton, extending along the shore between the bays of Wigton and Glenluce; generally fertile low land, as the name in Gaelic is said to import. It extends to about 64 square miles.

8. THE RINNS OF GALLOWAY,—a peninsula on the south-west side of the county of Wigton, opposite to Ireland, from which it is about twenty miles distant. It is formed by the bay of Glenluce and Loch Ryan, which separates it from the rest of the county, except where it is connected by an isthmus of six miles. It is about thirty miles long, and from two to six miles broad; in general hilly, but interspersed with much arable land and many villages and gentlemen's seats. It is the most populous part of the county. *Rinns*, in Gaelic, means a promontory or head land, which is peculiarly the case with this district, as it terminates with very long sharp points at both extremities.

DISTRICT III.

1. CARRICK,—one of the subdivisions of Ayrshire, the largest and the most southerly, is situated between the river Doon and the county of Wigton. It is a rocky and a hilly country, (as the name imports), and not very fertile. It is from this district that the eldest son of the King of Great Britain takes the title of Earl of Carrick. Its extent is about 396 square miles, with a population of about 33 to the square mile.

2. KYLE, or COIL.—This is the middle subdivision of Ayrshire. It extends to about 380 square miles, with a population of about 75 to the square mile. The lower part of this district next the sea is in excellent cultivation, and abounds with the seats of the residing proprietors. Ayr, the county town, is in this district, but hardly any other town of note.

3. CUNNINGHAM—is the most northerly subdivision of Ayrshire, also the smallest, the most populous, and the most fertile, being situated nearly all within ten miles of the sea. It is full of manufacturing towns and villages. It extends over about 260 square miles, with a population of about 135 to the square mile.

4. STRATHGREIF, or STRATHGRYFE.—This was in antient times the name of Renfrewshire, which formerly was a part of the lower ward of Clydesdale. The name was derived from the river Greif, or Gryfe, which runs through it.

5. CLYDESDALE—is that country which slopes down to the river Clyde, on both sides, to an extent of nearly 50 miles from the source of that river on the confines of Dumfries-shire, to Glasgow, after which, the country, although still upon the Clyde, assumes other names. It is in general a fertile valley both in corn and pasture, and is thickly peopled, having many towns and villages,

and embellished with a multitude of the country seats of the residing proprietors. It is one of the best fruit districts in Scotland, particularly that part denominated the *Trough of the Clyde*, which is a hollow in the vicinity of the river. The banks of the river are deeply indented, and covered with natural wood that shelters the orchards, which are commonly planted in the holms or haugh ground. This territory is abundant in coal and other minerals. It gives the title of Marquis to the Duke of Hamilton, whose chief residence is in it.

6. DOUGLASDALE,—so called from the water of Douglas, which running from south-west to north-east, falls into the Clyde, four miles above Lanark, after a course of 16 miles. It is principally a pastoral district, extending over about 80 square miles, and belongs chiefly to Lord Douglas of Castle-Douglas, who has planted here many hundred acres with wood, and has a magnificent mansion, lately rebuilt. It gives also the title of Marquis to the Duke of Hamilton, as heir of line to a former Marquis of Douglas.

7. LENNOX.—This seems to have been the antient name of Dunbartonshire, or rather of that country whose waters are conducted through the river Leven to the Clyde. Hence *Levenox*, as it was formerly called, softened into Lennox. In this derivation it will include part of the county of Perth, namely, Glenfalloch, whose waters fall into Loch Lomond, and a considerable part of Stirlingshire, where indeed the name only now exists in the *Lennoxhills* that approach near to Stirling on the south-west. It gives the Scots title of Duke to the Duke of Richmond, which family of late has assumed it as their surname, in place of their former surname of Stewart.

8. ARROCHAR, the country of the Macfarlanes—a very high-featured district, abounding in alpine scenery, at the head of Lochlomond on the west side.

DISTRICT IV.

1. ENRICK-WATER,—a territory in the western parts of Stirlingshire, so called from the name of the principal stream which flows from east to west through the heart of it, and delivers its waters into Loch Lomond. It extends 12 or 15 miles in length, and may be from 4 to 6 miles broad; is in general an arable country, pretty well cultivated; and has several villages, with many gentlemen's seats, and considerable plantations.

2. BUCHANAN.—This was formerly accounted one of the subdivisions of Dunbartonshire, and still appears as such in some maps published within these twenty-five years. It was supposed (very inaccurately indeed) to comprehend all that part of the county that lay to the eastward of Loch Lomond and the river Leven, whilst the rest of the county was supposed to be included under the name of Lennox. But at whatever time this

arrangement existed, is not now known. Even Buchanan itself is not within the county, but is an extensive parish in Stirlingshire, situated upon the north-east side of Loch Lomond. The Duke of Montrose has a very dignified mansion called Buchanan House in it, adjoining to the lake, amid some extensive and beautiful plantations. Buchanan is a very common surname among people of all ranks in this neighbourhood.

3. MONTEITH,—the most southerly subdivision of the county of Perth, comprehending all that country whose waters fall into the Teith and Forth before their junction, two miles above Stirling. It extends from west to east about 28 miles, and is in breadth from 6 to 12 miles, the average being about ten and a half, comprehending thus about 300 square miles. This county is remarkable for picturesque scenery, abounding in high towering mountains, much natural wood, beautiful lakes, full flowing rivers, with rich cultivated fields in alternate view. It was in ancient times among the most important Scottish earldoms. The last Earl who enjoyed the title was of the house of Graham, a name still very prevalent in the district.

4. STRATHALLAN.—This is a fertile and populous valley in Perthshire, to the eastward of, and adjacent to Monteith, by the water of Allan, with its numerous tributary streamlets, which falls into the Forth a mile above Stirling. It is of a triangular form, about 12 miles on a side, and will thus comprehend about 70 square miles. It gave the title of Viscount to a branch of the House of Drummond, attainted in 1746.

5. STRATHEARN,—one of the principal subdivisions of Perthshire. It extends 44 miles in length from west to east, on each side of the river Earn, and is of various breadths, from 15 miles to 3, comprehending altogether about 360 square miles. This is one of the most fertile, as well as the most extensive, agricultural districts in that county. The lower part of it, for about 30 miles, by a breadth of from 6 to 8, is one continued plain in full cultivation, bearing the most luxuriant crops of every kind of grain cultivated in Britain; and is richly decorated with gentlemen's seats, enclosures and plantations,—whilst the hills that bound it on either side are in general fine pasture, or clothed with natural woods. The upper part of the district is a more mountainous country, but still abounds in beautiful scenery on either side of the extensive Loch Earn that gives name to the district. This territory, in the more ancient days of the Scottish monarchy, was always held by a powerful chieftain with the title of Earl, for many generations, of the name of Maliss, a name still found in the district. It now gives the title of Duke to a branch of the Royal Family.

6. BREADALBANE.—This great division of Perthshire is situated to the northward of the upper extremity of Strathearn, but stretching greatly further west. It is about 50 miles long from west to

east, and about 14 miles broad at an average, thus comprehending an extent of about 700 square miles. It may be defined to be that part of the country whose waters flow from south and north to the loch and river of Tay as to a common centre, and is divided into the following districts; viz. Glenfalloch, Strathbrand, and the upper part of Glenalmond. It is almost wholly a mountainous country, but diversified with some beautiful sequestered valleys, as Glen-Dochart, Glen-Lyon, &c. and the extensive loch of Tay in the middle. It gives title of Earl to a branch of the house of Campbell, whose chief seat, Taymouth, is situated in the heart of it, and in the most pleasant part of the whole district.

7. GLENFALLOCH,—so called from the water of Falloch, which rising from several heads among the mountains in the west end of Breadalbane, directs its course southward for 8 or 10 miles, and falls into the north extremity of Loch Lomond. This glen is finely wooded and watered, and has also the advantage of the great military road from Dunbarton to Fort William passing through it.

8. STRATHFILLAN,—a fine pastoral valley among the mountains in the south-west corner of Breadalbane, situated on the banks of Etterick, before it falls into Loch Dochart. The military road to Fort William passes through this division; in which are situated different villages, as Auchtertyre, Tyndrum, and Clifton, where there are lead mines.

9. GLEN-DOCHART,—a beautiful valley in the upper extremity of Breadalbane, extending between Loch Dochart and Loch Tay, about 12 miles in length, with the clear limpid stream, the Dochart, in the middle. It is bounded by very high mountains, prettily fringed with wood, and has a small proportion of haugh land that produces tolerable crops, and generally very early. It abounds in game.

10. GLEN-LOCHY,—a pastoral glen, pretty thickly peopled, in Breadalbane; extending about 12 or 14 miles in length, first in an east, and then in a south-east direction, till it joins its waters with the Dochart at Killin, whence the united stream flows forward into Loch Tay.

11. GLEN-LYON,—takes its name from the water of Lyon in Breadalbane, on the north side of Loch Tay, which rising from Loch Lyon near the borders of Argyleshire, flows for about 30 miles in an easterly direction, and joins the Tay below Taymouth. It is a very narrow valley, seldom more than a gunshot over, but is pretty thickly inhabited, there being 28 villages in the course of 28 miles. To some of these, the sun is invisible for two or three months in winter, owing to the mountains on both sides being high and precipitous. Yet the land is cultivated the whole way by the water side, and produces tolerable crops, which ripen as early as in any other part of the county. It belongs to the clan

Menzies; and two gentlemen of that name reside here occasionally among their people.

12. RANNOCH, *(land of ferns)*,—the country of the Robertsons, one of the subdivisions of Perthshire, is situated between Athol on the north, and Breadalbane on the south. It is 27 miles long from W. to E. and 12 miles at its greatest breadth, which is near the west extremity, comprehending all that country whose waters fall into Loch Rannoch and the river Tumel which issues from the loch, as far east as the bridge of Tumel, where this county commences, being 6 miles east from the lake. It extends over an area of about 180 square miles. It is chiefly a pastoral country, full of mountain streams, the principal of which are, 1. The Gaur, which connects Loch Rannoch with Loch Lyddoch, (partly in Rannoch, partly in Appin). 2. The Ericht, which connects Loch Ericht with Loch Rannoch. Both these streams flow into Loch Rannoch on the west. 3. The Tumel, which issues from Loch Rannoch at the east corner, and flows through Strath-tumel till it joins the Garry. There are considerable quantities of natural wood on the sides of the lake, and the different rivulets that fall into it; some of which are very valuable, particularly the fir woods. But there is not much arable land in cultivation: the chief dependence of the people (who occupy 35 villages and are pretty numerous) is upon their cattle, which are reported by Mr Marshall, in his Survey, to be among the best in the central Highlands. Robertson of Strowan, who is the chief proprietor, has two of his seats in this county, namely, *Carie* on the south side of the Loch, and *Mount Alexander* on the north banks of the Tumel. There are two other proprietors, besides, of the name of Stewart, and one of the name of Macdonald. But at least nine-tenths of the district is occupied by Strowan and his clan.

13. ATHOL, *(pleasant land)*,—the most northerly division of Perthshire; a very mountainous district, the precise limits of which are not very clearly defined; but it is here understood to include all that part of the county whose waters fall into the Tay from the east above Dunkeld, and all to the northwards of Breadalbane except Rannoch. This will of course include several distinct valleys, which shall be noticed each particularly. The face of the country is one continued range of mountains, which are intersected with many rapid rivulets confined in narrow glens. These formerly were thickly clothed with forest timber of all kinds, the extent of which is much reduced, as wood is to be found now only in the most sheltered places. In the bottoms of the glens, by the sides of the rivulets, there are many strips of arable land, which, where not overrun with gravel brought down by the floods, produce good crops of bear, oats, and potatoes, for the sustenance of the people, who amount to about 15,000 souls. These are to be found almost exclusively on the banks

of the principal streams, the Tay, the Tumel, the Garry, the Till, and around the mansions of the respective chieftains, which are set down amidst natural woods, and have been lately adorned by plantations. Athol was formerly one of the finest hunting countries in Scotland, and was much celebrated on that account. But now that the native woods have in a great measure disappeared, the herds of deer have diminished, and given place to the more useful animal, the sheep, of which there are now many thousands fed on the different ranges of these high-towering mountains; besides a numerous breed of good Highland cattle. There still, however, remains a considerable number of red deer, more especially in the Duke of Athol's extensive domains about Blair, where indeed there is a very great quantity of natural wood, as well as many new plantations. This alpine territory extends over about 450 square miles. It gives the title of Duke to the chief of the Murrays, a name, after all, little known in the district. The Stewarts, the Robertsons, and the Fergussons, are the most prevalent clans.

14. STRATH-TUMEL,—a pleaſant valley in Athol, ſituated immediately north from the Strath-Tay diviſion of Breadalbane, and eaſt from Rannoch. It is full of gentlemen's ſeats, almoſt all of whom are of the name of Stewart. It is about 9 miles long, and 5 miles broad, reckoning to the top of the bounding hills.

15. STRATH-TAY,—a beautiful Highland valley in Breadalbane, on each ſide of the Tay, from Loch Tay down to its junction with the Tumel. It is about 12 miles long, and 6 miles broad, to the top of the hills on each hand. It is alſo full of gentlemen's ſeats, of whom the moſt prevalent ſurnames are Stewart, Menzies, and Robertſon.

16. STRATHGARRY,—the moſt weſterly ſubdiviſion of Athol, lying on each ſide of the river Garry. It is in general a mountainous and barren tract, and the upper part in particular very thinly peopled. It belongs partly to the Duke of Athol, partly to the Stewarts, and partly to the clan Robertſon. It is about 15 miles long. The inhabited part is rarely a mile broad.

17. GLEN-EROCHKIE,—a valley in Athol, a branch of Strathgarry; is about 10 miles long, and one or two miles broad. It belongs to the Robertſons.

18. GLENBRUAR.—This romantic valley, ſo abundant in caſcades and other pictureſque ſcenery, is ſituated in Athol, about 4 miles weſt from Blair, on each ſide of that wood-clothed and limpid ſtream the Bruar, which falls from the north into the Garry, and is ſo highly celebrated by all the touriſts.

19. GLENTILT.—This ſtill more romantic valley is alſo in Athol, and its waters fall from the north into the Garry, at Athol-Houſe.

20. STRATHBRAND,—is a beautiful paſtoral, but mountainous diſtrict in Breadalbane, on each ſide of the water of Brand, which falls into the Tay from the weſt at Dunkeld. It is about 12 or 14 miles long, and 8 miles broad to the top of the hills on each ſide,

It is remarkable for much romantic ſcenery. The upper part, a very wild country, is known by the name of *Glenqueech*.

21. GLENALMOND.—This valley is partly in Breadalbane, and partly in Perth proper. The upper part, which is in Breadalbane, is an extremely rugged and mountainous tract, about 12 miles long, with a thin population, and a ſtill more ſcanty ſupply of grain. The lower part, in Perth proper, is about 12 miles alſo in length, and is a fine champaign country, in high cultivation, and thickly peopled. The river that gives name to the whole, falls into the Tay, about 2 miles above Perth.

22. PERTH PROPER—is that plain country stretching along the Tay on the east, from 2 miles below the town of Perth to within 4 miles of Dunkeld, a space of about 12 miles; and from the Tay westward, at a various breadth of from 12 miles to 5. It contains in all about 112 square miles, of a very fertile and well-cultivated country, greatly embellished with gentlemen's seats and plantations, well watered by the Tay and a multitude of its tributary rivers and streamlets, and very thickly peopled.

23. STORMONT,—a subdivision of Perthshire, in the front of the Grampians, surrounded by the Tay on the west; the Isla and the Tay on the south; the Isla on the east; Strathardle and Glenshee on the north, and also part of Athol in that quarter; thus comprehending all that tract, whose waters flowing southward, fall either into the Tay below Dunkeld, or into the Isla, but, exclusive of the Ardle and the Shee, before their junction, these streams giving names to separate and distinct territories. It extends 16 miles from east to west, and is from 6 to 12 miles broad from south to north, and comprehends in all about 130 square miles. This district is very populous, and the face of the country is beautifully diversified with hill and dale, rivers and lakes, rich arable lands, and fine green pastures, in alternate succession. It is also greatly embellished with gentlemen's seats and plantations, more so perhaps than any other tract of the like extent in the county. It gives the title of Viscount to the Earl of Mansfield.

24. STRATHARDLE,—a pastoral valley in Perthshire, that lies between Stormont on the south, and the mountains of Athol on the north and the west, with Glenshee on the east. It is about 15 miles long, and from 5 to 10 miles broad to the top of the surrounding hills. It diverges, towards the upper end, into the two vales of *Glen-Brierachan* and *Glenfernate*, like to itself, green pastoral valleys, with a still less proportion of arable land.

25. GLENSHEE (or the Glen of Fairies)—is the most north-easterly subdivision of Perthshire, situated between Strathardle and the Braes of Angus, and is about the same extent as Strathardle, with perhaps a greater proportion of arable land. There are many gentlemen's seats; and it is otherwise a very pleasant valley, surrounded with very high green hills.

26. Gowrie.—This is the most easterly division of the county of Perth. It is bounded by the Tay on the west and south, by the Isla on the north, and by Angus on the east. It is nearly of a square form, between 11 and 12 miles on a side, and may comprehend about 120 square miles. It contains some of the most fertile land in Scotland, or perhaps in Britain, more especially that part called the *Carse of Gowrie.* The more inland part of it, beyond the Sidla hills, is also very fertile, and well cultivated. These hills are very valuable, from the excellent pasture they afford; and they add greatly to the beauty of the scenery, from the diversity they occasion in the proſpect, and from the many places planted with wood around the ſeveral gentlemen's ſeats interſperſed among them. The Carſe is alſo famed for being a good fruit country, not merely in the gardens of the numerous reſiding gentry, but on a larger ſcale, in orchards planted for the purpoſe of making a profit from this branch of rural economy. No other place in Scotland, except Clydeſdale, produces fruit in ſuch abundance.

27. Strathmore, or the Great Valley.—This, in the largeſt acceptation of the term, would include all that hollow country from the hills, about 10 or 12 miles weſt from Perth, to Stonehaven on the coaſt of the Mearns, a tract nearly 80 miles in length from S. W. to N. E., and from 16 miles to 1 mile broad, with hardly a hill or an eminence to obſtruct the view. But as this includes a conſiderable part of country otherwiſe deſcribed as Perth proper, and the How-o-the-Mearns, the appellation ſhall be confined to that part of it contained in the ſhire of Forfar, and in the northern part of Gowrie, from the river Tay by Perth on the S. W. to the North-Eſk bridge between Angus and Mearns on the N. E. This tract is about 40 miles in length, by a pretty general breadth of 6, extending in all to about 240 ſquare miles, having the high-towering Grampian hills, like to a wall, on the north, and the ſmaller and more broken boundary, the Sidla hills, upon the ſouth. This country is almoſt wholly under tillage, and cultivated in a very ſuperior ſtyle, the ſoil being naturally of the beſt quality, ſo as amply to repay the huſbandman for the labour beſtowed. It gives the title of Earl to the family of Lyon, whoſe principal reſidence is at the venerable Caſtle of Glammis, in the heart of the valley. It is alſo greatly embelliſhed with the country ſeats of a very numerous claſs of opulent proprietors, each amid extenſive and thriving plantations. It may be remarked, merely for preventing miſtakes, that there is a Strathmore alſo in Caithneſs, being that large valley, about 15 miles in length, through which the river of Thurſo flows in the upper part of its courſe from weſt to eaſt; in the vicinity of which, in a ſmaller valley, by another branch of the Thurſo, the country is known by the name of *Strathbegg,* or the little valley.

28. Angus.—This ſeems to be nearly a ſynonymous, but more

ancient term for the county of Forfar. Angus was however more extenſive in ancient times than Forfarſhire is at preſent, as the town of *Cupar-in-Angus*, within 13 miles of Perth, is but partly now within the county, and as it extended to Glenbervie in the county of Kincardine. It gave the moſt ancient title of Earl known in Scotland, as far back as the year 890; and that title, along with precedency over all other Earls in Scotland, and conjoined with great territorial property, was poſſeſſed by the chief of the potent family of Douglas. Lord Douglas of Douglas has ſtill conſiderable property in this county.

DISTRICT V.

1. THE MEARNS.—This country was anciently composed of thanedoms, viz. Durris, Cowie, Arbuthnot, Aberluthnot and Fettercairn, which last was also called *the Mearns*. The Mearns is frequently understood to be the same with the county of Kincardine. This, however, is not correct; for it appears evident, that all that part of the shire which is situated to the northward of the Grampian mountains, shelving on both sides towards the Dee, is comprehended in the ancient territory of Mar. The *How-o-the-Mearns* is that part of Strathmore, that is continued through the county of Kincardine, and in character is very similar to the rest of that valley.

2. MAR,—is the most southerly and most extensive district in Aberdeenshire, and also comprehends the northern side of the county of Kincardine, including all that district the streams of which fall into the Dee from the south and north, besides all the country between the rivers of Dee and Don, and part of the subdivision of *Alford* on the north of Don, to the bounding hills of *the Garioch*. In this definition of its limits, it extends over a country about 64 miles in length from west to east, at a various breadth of from 3 miles to 26, the average perhaps 16; thus comprehending an area of 1024 square miles, of which about 104 may be stated as in the county of Kincardine, and 920 in the county of Aberdeen. In the upper part it is mountainous and barren, but has nevertheless a small proportion of arable and even fertile lands by the sides of the rivers, as well as considerable expanses of cultivated land over the whole district. It abounds, in a considerable degree, in natural woods, particularly on the banks of the Dee, and many plantations around the different seats of the proprietors, more especially on the banks of the Don. Mar, from its great extent, has always been, and still must continue an important district. In ancient times it was frequently the patrimonial property of a branch of the Royal Family, with the title of Earl, which it latterly gave to the chief of the family of Erskine, one of the most respectable of the Scottish nobility. What is called *Cromar*, in Gaelic *Cruic var*, or the sheep-cote, bucht or fold of Mar, is situated from 32 to 37 miles

west from Aberdeen, on the north side of the Dee,—an appellation corresponding pretty much to its figure, as it is a flat sequestrated country, surrounded on the west, north and east, by high mountains, and open to the south only, by a comparatively narrow passage. There are several gentlemen's seats within it, beautifully ornamented with natural woods and plantations, and it has also a considerable proportion of rich arable land, extending from 15 to 20 square miles. *Midmar* is the name merely of a small parish, midway between the Dee and Don. Neither this nor the other are to be considered as subdivisions of the great country of Mar, but merely as small component parts.

3. FORMARTIN and BELHELVIE.—These two territories in conjunction, which composed two ancient thanages, though now known only by the name of Formartin, are considered as one of the subdivisions of Aberdeenshire. It lies on the east coast, between the rivers Don and Ythan, and stretches at an average breadth of about ten miles across the whole county, in a direction from S. E. to N. W. till it reaches the Deveron on the confines of Banffshire, at the distance of 28 miles, and contains thus about 280 square miles of territory. The soil is very various; part of it fertile land, well cultivated, and part of it consists of moors and mosses, and lands partially cultivated; the whole is bounded either by rivers or low ranges of hills on either hand.

4. THE GARIOCH, anciently *Garviauch*,—an inland district in Aberdeenshire, which lies between the preceding division and the river Don, but does not come within less than 8 miles of the sea. It is chiefly limited to that country whoſe waters fall from either hand into the river Urie, extending about 24 miles in length from west to east, and from 3 to 10 miles in breadth, comprehending in all about 150 square miles. In general it is a rich valley of good arable land, of a naturally loamy soil, the most fertile in the county, and well sheltered by surrounding hills. The whole is in pretty good cultivation, and is remarkably early, the harvest generally beginning and ending sooner here than on the coast side.

5. STRATHBOGIE,—one of the subdivisions of Aberdeenshire, in the north-west corner of the county, lying on each side of the river Boggie. It is about 14 miles long from S. E. to N. W. and from 6 to 10 miles broad, comprehending an area of about 120 square miles. About two-thirds of the country is altogether hill or mountain: as to the remainder, some of it is very well cultivated, but there is still much room for improvement. The barony of Strathbogie was given by Robert Bruce, on the forfeiture of the Cummins, to the ancestor of the Duke of Gordon, to whom the greater part of the *ancient lordship*, much larger than the barony, still belongs.

6. BUCHAN,—which signifies properly the Bend of the Ocean, and is very expressive of the situation of this great promontory, is one of the subdivisions of Aberdeenshire, being the most northerly, and, since the introduction of the turnip husbandry, has become the most valuable. It is embraced by the river Deveron on the west, the Ythan on the south, and the ocean on the east and the north, which washes its bold precipitous shore for 50 miles together. It is about 25 miles long from east to west, and from 12 to 30 miles broad from south to north, comprehending an area of about 450 square miles. It is almost all a flat country, susceptible of cultivation, and much of it is in fact well cultivated and very productive; the soil being in general a fertile clay, readily yielding to the means of improvement. The cattle here were formerly inferior to those in most other parts of the country; but by improving their keep, and selecting good kinds of stock, this district now produces cattle, which, both for shape and size, are little inferior to any in Britain. The aspect of the country, however, near the coast, is not very inviting, as it is almost destitute of wood, and has many dark mosses, and much marshy land still remaining undrained. From the present enterprizing spirit of its husbandmen, the last blemish, in all probability, will soon be overcome; but the prospect is more remote of seeing thriving plantations in a country so much exposed to the sea breeze, and so little sheltered from the blast. In the times of the ancient Scottish monarchy, when titles were always accompanied with territorial possession, this earldom was alternately, as the different factions prevailed, the reward of the most potent nobility, and sometimes indeed appropriated to the Royal Family itself. And 600 years ago, it had extensive forests of wood, which were destroyed by King Robert Bruce, to punish the rebellion of the Cummins. It now gives title of Earl to a branch of the Erskine family, but without any territorial possessions.

7. THE BOYNE,—the low part of Banffshire, next the town of Banff, which town was originally spelt and spoken Boynffe; a fertile territory along the Murray Frith.

8. THE ENZIE,—the western part of the low country of Banffshire. Neither of these ancient distinctions are now in use, farther than as names of the districts.

9. 10. 11.—There are other three divisions of Banffshire, viz. AUCHINDOUN, STRATHAVEN and BALVENY, which are inland districts, and contain about 260 square miles. They contain some high mountains, valuable woods, and, along the sides of the rivers especially, some very fertile lands.

12. MORAY or MURRAY, (in Gaelic *Mor-fhaicke*, the wide extending plain, and improperly confounded with the modern county of Elgin),—was an extensive ancient province in the north, upon the south coast of what is (from itself) called the Murray

Frith. It extended from the river Spey on the east, to the water of Beauly on the west, 10 miles beyond Inverness, a stretch of about 50 miles; including the whole of the counties of Elgin and Nairn, and likewise a considerable portion of the richest lands in Inverness-shire, altogether about 900 square miles. It was, till of late, esteemed the most fertile and best cultivated county in Scotland. But, from the great improvements that have been effected, in the course of these last fifty years, in the more southerly counties, Moray, which has been rather stationary, cannot now pretend to that preeminence. The fertility of the soil, however, is still very considerable, and the climate is mild, perhaps milder than any where else in Scotland. In the more ancient period of our history, this province was the best earldom in the gift of the crown, and (being a county palatine with extensive jurisdiction) was often keenly contended for by the aspiring nobility, when on any vacancy it became disposeable,—an occurrence that, in those troublesome times, frequently happened. The title, but without the ancient privileges, is now in the person of a descendant of the Royal House of Stewart, who has different seats, and a considerable landed property in the heart of the county.

13. FERINTOSH, (or the country of the chief),—remarkable for the distillation of whisky, which till of late was duty free, is a territory of about 5000 acres, chiefly arable, belonging to Forbes of Culloden, situated on the south side of the Frith of Cromarty, in the vicinity of Dingwall. It is a detached part of the county of Nairn.

DISTRICT VI.

1. KINTYRE or CANTIRE, in Gaelic meaning the *headland* or promontory.—This is the moſt ſoutherly ſubdiviſion of Argyleſhire, being a long ſtrip of land ſtretching ſouthward about 42 miles beyond any other part of the mainland, and is at an average 7 miles broad, thus comprehending an area of 294 ſquare miles. It is ſeparated from Knapdale on the north by a narrow iſthmus of leſs than a mile, and is bounded every where elſe by the ocean. Having upwards of 96 miles of ſea-coaſt, and being in the immediate vicinity of the ſea, the air is in general milder than in any other diſtrict of the county. The ſoil is alſo more fertile; and although it has a competent ſhare of mountains and barren hills, yet there is a good proportion of arable land, chiefly by the margin of the ſea; and it contains many ſmall freſh-water lakes. It is the moſt populous territory in Argyle; Campbeltown, the greateſt town in the ſhire, being ſituated in this diſtrict. In the neighbourhood of that town, which is near to the ſouth extremity, there are ſome coalworks, which have conduced to augment the population, which is now at the rate of 60 to the ſquare mile.

2. KNAPDALE, one of the ſubdiviſions of Argyleſhire.—It is

embraced by the Sound of Jura on the weſt, Lochfine on the eaſt, Kintyre on the ſouth, and Argyle proper on the north, from which it is ſeparated by the Crinan Canal. It is about 24 miles long from N. to S. and generally 8 miles broad, and may contain 120 ſquare miles. It is greatly interſected by branches of the ſea, and although abounding in hills and mountains, it has in general a mild climate, and conſiderable fertility. Next to Kintyre and Lower Lorn, it is the moſt populous diſtrict in the county; for though there is not a town, or hardly a village in the diſtrict, the population amounts to about 34 to the ſquare mile.

3. ARGYLE PROPER (*Earra Ghaidheal*), the *west* Gaël's country).—This extends from the Crinan Canal on the S. W. to the further end of Lochawe on the N. E. about 26 miles; and being in general about 14 miles broad, will thus contain an area of about 360 ſquare miles. It is for the moſt part a hilly barren country, and thinly peopled, but abounds in fine ſcenery, more eſpecially about Inverary, the county town, (where the Duke of Argyle has his magnificent ſeat on the banks of Lochfine), and around the ſides of the beautiful Lochawe, which is ſituated in the heart of this interior diſtrict.

4. COWAL, the moſt eaſterly ſubdiviſion of Argyleſhire,—is ſituated on the Clyde next to Dunbartonſhire, and almoſt ſurrounded as well as deeply indented by different branches of the ſea, inſomuch, that although but 32 miles long, and from 6 to 16 miles broad, it has upwards of 120 miles of ſea-coaſt, beſides a conſiderable freſh water lake in the middle. Hence it is remarkably adapted for conducting the fiſheries. It is an exceedingly mountainous country, but affords excellent paſture, on which are fed great numbers of cattle and ſheep. It is divided into 6 pariſhes; with a population of about 6000 ſouls. The principal reſiding heritors are, Campbell of Ardkinglaſs, Campbell of Strachur, Maclauchlan of Stralauchlan, and Lamont of Lamont.

5. LORN,—a territory in Argyleſhire, ſubdivided into Nether, Mid, and Upper Lorn; in which enlarged extent it ſtretches along the weſt coaſt from Loch Melfort on the ſouth to Loch Leven on the north, upwards of 30 miles. What is here to be ſtated reſpecting this diſtrict, is limited to thoſe parts called Nether Lorn and Mid Lorn, as the diviſion called Upper Lorn is more generally known by the different names of Benideraloch and Appin, and is a diſtinct territory, ſeparated from them by branches of the ſea. In this limited ſenſe, Lorn extends from Loch Melfort to Loch Etive, about 14 miles, at an average breadth of 9, equal to 126 ſquare miles. It is reckoned among the moſt pleaſant diſtricts in Argyleshire; and has ſeveral freſh-water lakes, and branches of the ſea, with a number of beautiful iſlands cloſe upon its coaſt, ſo as to be hardly diſtinguiſhed from the Mainland. It abounds with natural wood, and fertile land, by the ſides of its many waters. There are ſeveral rich iron mines in this country, and alſo the thriving town of

Oban. Lorn was formerly poſſeſſed by a potent chieftain, *Macdougal* of Lorn, who was many ages ago diſpoſſeſſed by the Campbells, a more fortunate, and perhaps a leſs turbulent, clan. It gives the title of Marquis to the Duke of Argyle. The population is at the rate of about 50 to the ſquare mile.

6. Glenurchy and Glenetive,—the moſt north-eaſterly ſubdiviſion of Argyleſhire, bordering on Breadalbane and Rannoch in Perthſhire. It contains an area of about 20 miles by 15, or 300 ſquare miles. It is in general a mountainous and barren country, but enlivened in a conſiderable degree by the waters of Urchay, Etive, and other mountain ſtreams, which flow through it in a direction from N. E. to S. W. amid many natural woods along their reſpective banks. It abounds greatly in game of all kinds, and feeds numerous flocks of cattle and ſheep. It has alſo iron and lead mines, ſlate, and other minerals, and wants little elſe but ready means of acceſs, to make it a valuable as well as a pleaſant rural country. It gives the title of Viſcount to the Earl of Breadalbane, who is the chief proprietor.

7. Glenco,—a ſequeſtered vale in Argyleſhire, along a ſmall ſtream on the ſouth ſide of Loch Leven, 8 miles ſouth from Fort William; remarkable for a maſſacre of the unſuſpecting inhabitants in 1691, through the influence of their malignant enemy, the then Earl of Breadalbane.

8. Muckbarn,—a ſubdiviſion of Lorn, ſituated upon the ſouth ſhore of Loch Etive; a fine mountainous country, abounding in wood and rich paſture, on which are fed numerous herds of cattle, ſheep, and not a few red and fallow deer, as well as roes. It has alſo great iron-works, and a pretty numerous population.

9. Beneideraloch, (the heights between the lakes),—a diſtrict in Argyle, in the province of Lorn, ſituated between Loch Etive and Loch Creran, otherwiſe known by the name of Ardchattan. It is a fine hill and dale country, full of natural woods, and abounding in game, particularly red and fallow deer. It contains excellent paſtures, and a conſiderable portion of arable land; alſo ſome rich iron mines. It extends over about 120 ſquare miles of country, encloſed on three ſides by the ſea.

10. Appin,—a mountainous diſtrict, in the province of Lorn alſo, being the moſt northerly in that diviſion of Argyleſhire. It is bounded on three ſides by the ſea; Loch Creran on the ſouth, Loch Leven on the north, and the Linnhe Loch on the north-weſt. It conſiſts in general of good paſturage, a conſiderable proportion of wood, and a little arable land. Red deer are to be met with; but formerly, it is ſaid, they were remarkably abundant, when Appin was more covered with wood. As deſcribed here, it extends to about 50 ſquare miles.

11. Morven, (or *Mor-bhearn*, high mountains), or, more conſonant to Gaelic orthography, *Morvern*,—is a diſtrict in Argyle, having Appin on the ſouth and ſouth-eaſt, Mull on the weſt, and

Sunart on the north, but divided from them all by arms of the ſea. It is a peninſula of a triangular ſhape, of from 12 to 16 miles on each ſide. It is much indented by other arms of the ſea; ſo that the whole area will not exceed 120 ſquare miles. It is a very hilly country, but has good paſtures, on which are fed 14,000 ſheep, 2500 cattle, 250 horſes, beſides goats and deer that cannot be numbered. The arable land is chiefly limited to the moſt ſheltered places by the sea and ſides of rivulets, and is after all but very poor in quality, not raiſing near ſo much grain as to ſupply the thin population, which amounts to about 2000. The land abounds with game of all kinds; the ſea and lakes are well ſtored with fiſh, ſuch as herring, ſalmon, &c.; and on the ſhores about 70 tons of kelp are yearly made. The rent is ſtated at 2200*l.* Sterling; and the Duke of Argyle is the principal heritor.

12. ARDNAMURCHAN, (the region of the great ocean),—a very mountainous district in Argyllshire, and the most westerly promontory on the Mainland of Britain. It is about 20 miles long, and from 3 to 7 miles broad; and is so much of a peninsula, as to have upwards of 50 miles of sea-coast. It is tolerably fertile, not merely in pasture, but in corn, along the margin of the different creeks. It has been measured, and found to contain 53,700 Scots acres, in which is included as much arable land as produces 7500 barrels of potatoes, (30,000 bushels), 1600 bolls of oats, and 400 bolls of bear. The rent paid to Sir James Riddell is 2009*l.* 9s. 7d., being somewhat more than a shilling the acre, besides 237*l.* 17s. for wood yearly. The live stock is stated at 221 horses, producing 50 foals yearly; 3108 cattle, producing 1036 calves; 5516 sheep, producing 1838 lambs. It contains also a few swine. The total value of the live stock is estimated at 16,680*l.*, and the annual produce of the whole territory at 7471*l.* including 60*l.* for the sea fishery.

13. SUNART.—This mountainous territory is situated immediately east from the preceding; may be about 12 or 15 miles long from west to east, and about 8 miles broad, having the Linnhe Loch and part of Lochiel on the south and south-east, and Loch Shiel, a fresh-water lake, on the north and north-west. It has also its own sea loch for a short way in the interior. It is more remarkable for lead-mines than any thing else, unless perhaps its pastures, on which are fed 14,400 sheep, 1014 cattle, and 84 horses. It makes part of Argyllshire.

14. ARDGOWAR (or the country of goats)—also in Argyllshire, is situated between Lochiel on the east and north, and Loch Shiel on the west, opposite to Fort William. It is a mountainous tract, with much natural wood, and many roe deer. It belongs to a branch of the great clan Maclean.

15. MAMORE,—a territory also in Argyll, is situated on the north side of Loch Leven, which has led some geographers to include it in Inverness-shire. It is a hilly country, of a triangular

form, about 6 or 7 miles on a side, lying on the east or rather south east side of the southern branch of Lochiel. Its waters, in a narrow glen, run southerly into Loch Leven. It is the paternal property of the present Argyll family, who had it in possession before they succeeded as collaterals, about fifty years ago, to the ducal title and estates.

16. LOCHIEL.—This territory, belonging to the respectable clan Cameron, is situated on the east and north side of that branch of the sea by Fort William. It consists of vast mountains and extensive woodlands; and is pastured with numerous herds of cattle, sheep, goats, red and fallow deer, and abounds in game of all descriptions. There is a small strip of arable land on the margin of the loch. This applies only to what is in Argyllshire. The territories of Lochiel, the chieftain, extend much farther, and form a considerable part of Inverness-shire, by Loch Arkeig, where at Auchnacary he has his chief residence, in a fine rural and even well cultivated country.

17. BADENOCH, (in Gaelic means the *bushy country*, or *full of groves*),—is the S. E. division of the shire of Inverness, bordering on the counties of Elgin, Aberdeen, and Perth; and extends 35 miles from east to west, and 20 at an average from north to south,—thus forming an area of 700 square miles. It is chiefly a large valley on both sides of the Spey, containing a great proportion of fertile lands, and several miles of the Coillmore or Great Wood of Scotland, as well as much natural wood and extensive plantations. It has a population of about 6000 in 3 parishes, and part of a 4th. Its rents are about 12,000*l.*, and it is ornamented by an elegant villa built by the late Dutchess of Gordon; and by the seats of the different proprietors, particularly Mr Macpherson of Cluny, and Mr Macpherson of Belville, son of the translator of Ossian's Poems, and Colonel Gordon of Glentromie. It abounds in fish, game, and beautiful scenery. Besides stags and roe-deer, grouse, ptarmagan, blackcock and woodcock, it has a multitude of water-fowls, particularly swans, that resort to Loch Insch, and its other lakes. It is almost surrounded by high mountains, and is situated in the very centre of the island. The only town of any consequence in this division, is Kingussie, which was erected into a burgh of barony in 1460, and is a neat well built village, containing 313 inhabitants at the last enumeration in 1811. The inundations of the Spey are sometimes very extensive; but the arable land in the valley is generally protected by earthen dikes; and the grazings are very valuable. The Duke of Gordon is superior of the greatest part, and proprietor of the half of this district.

18. STRATHSPEY may, in an enlarged acceptation, be defined, the country shelving on either side to the river Spey, along its whole course, from the mountains of Badenoch to the sea; but it is generally understood as designating that part only, about the

middle of its course, extending about 30 miles between the two Craig-ellachies, and is otherwise called the *country of the Grants*, from being the chief residence of that powerful clan. The sprightly Highland airs, called *Strathspeys*, (particularly Tullichgorum), have originated from this country.

19. STRATHEARN, incorrectly in some maps called Strathdearn,—is the highest part of that valley, through which the Findhorn flows in Inverness-shire, before it reaches the county of Nairn; and lately attracted the notice of the patriotic Highland Society, to the improvement of its cattle, who offered premiums for the best of the breed. It belongs chiefly to the Laird of Macintosh.

20. STRATHNAIRN,—another Inverness-shire valley, about 8 miles south from Inverness; about 20 miles long; which belongs to several Highland clans.

21. STRATHERRICK,—a country belonging to the Frasers in Inverness-shire, by the sides of the Errick; which, on the south, falls into Lochness, about 10 miles east from Fort-Augustus. It is a very recluse tract, in the midst of high mountains; but great exertions are making by the proprietors to meliorate the state of the country, and the condition of the people.

22. LOCHABER,—comprehends all that country whose waters flow directly or ultimately westward by Fort William or Inverlochy to Lochiel, a branch of the sea, and contains a territory, of which the utmost length from east to west is 30 miles, and the greatest breadth from south to north 24. Its extent is nearly 530 square miles, in which are included a multitude of fresh-water lakes, to the extent perhaps of 40 or 50 square miles. It has Badenoch on the east, Glengary to the north, Morror, Arasaik, and Ardgowar, to the west; Appin and Rannoch, to the south, and abounds in high mountains, (Bennevis, the highest in Britain, being here): yet its pastures feed great flocks of sheep, cattle, and not a few deer; which last find a retreat in the recesses of the high mountains, or shelter themselves in the thick forests, of which there still remains a considerable extent, in the many sequestered glens. The grazings are valuable and extensive; and the rents amount to about 11,000*l*., of which 6000*l*. belongs to the Duke of Gordon. The arable land is very inconsiderable. It is situated chiefly in haughs that are frequently overflowed by the torrents, which deposit sand and pebbles on the surface of the soil. The population is very thin; and the only town is Gordonsburgh or Maryburgh, near Fort William.

23. GLENMORE, (*na-h'albin*, or the great glen of Scotland), as it is emphatically called by the Highlanders,—is that great valley, stretching from Fort George, on the east coast, to Fort William on the west, which divides Scotland, without a single interrupting hill, from the one sea to the other. This has suggested the grand idea of making it navigable by means of the Caledonian Canal,

one of the greatest works of the present age. This glen extends almost in a straight line from south-west to north-east, about 100 miles, including the Frith of Beauly on the east, and the Linnhe Loch, with Lochiel, on the west. Of this, nearly 80 miles are already navigable by nature. The intervals between the different fresh-water lakes, and between these lakes and the branches of the sea, have already rivers almost navigable, or at least fully capable of yielding water for the supply of the canal, which is calculated to admit of 32 gun frigates, or ships of 600 tons burthen.

24. Glengary,—a considerable valley in Inverness-shire; which, after a shelving course of about 20 miles in length from west to east, and at a breadth varying from 2 to 6 miles, to the summits of the hills on each side; and having different lakes and a mountain stream in the middle, makes a sudden turn near the termination of its course, and delivers its waters into Loch Oich, in the tract of the Caledonian Canal, 6 miles south-west from Fort Augustus. It is chiefly a pastoral district, hemmed in by hills and mountains on both sides, with some fine woods near its lower extremity. It belongs to the chief of the MacDonnels, a branch of the clan MacDonald.

25. Glen-Moriston,—an extensive pastoral valley in Inverness-shire, situated by a river that falls into Lochness on the north side, five miles east of Fort Augustus, after flowing many miles through a thickly-wooded country. It belongs to a branch of the clan Grant, and is inhabited by about 650 people.

26. Glen-Urquhart,—a winding glen of conſiderable extent, and of more than common fertility, in Inverneſs-ſhire, is ſituated chiefly on the north ſide of the mountain Mealfourvouny (or the Cold Mountain), and whoſe waters fall into Lochneſs, on the north ſide, about 12 miles weſt from Inverneſs. It belongs chiefly to Corrimony, a branch of the family of Grant.

27. The Aird, Lovat's country, or the country of the Fraſers,—is ſtretched out for about ſix miles between Inverneſs and Beauly, along the ſouth ſide of the Frith of Beauly; a country abounding in beautiful scenery of woods and waters, hills and dales, in continued ſucceſſion, with ſome very fertile corn fields in high cultivation.

28. Strathglass, the Chiſholm's country.—It is a paſtoral and richly wooded country, among the mountains in the northern part of Inverneſs-ſhire, by the river Glaſs (or Gray Water), which flows from 12 to 16 miles parallel to Lochneſs, at about ten miles diſtance. It forms the principal branch of the water of Beauly.

29. Moydart,—the moſt southerly ſubdiviſion of Inverneſs-ſhire. It is of a peninſular form; ſeparated in part from Ardnamurchan on the ſouth, by Loch Moydart, a branch of the ſea; from Ardgowar on the eaſt the whole way, by Loch Shiel, a freſh water lake; and from Araſaik, by Loch Aylort, a branch of the ſea, leaving it in that quarter an iſthmus of about 4 miles,

connecting it with the Mainland. It is about 13 miles long from ſouth-weſt to north-eaſt, and about 5 miles broad at an average, containing thus an area of 65 ſquare miles. It is a very mountainous country, affording ſo very little arable land as to produce only 300 bolls of oats, and 56 of bear, annually. But there are 4000 barrels (perhaps 1000 Lothian bolls) of potatoes raiſed, which, after all, muſt be much ſhort of what is neceſſary to maintain the inhabitants, who amount to 712, nearly all Roman Catholics. They have 24 horſes, 1150 cattle, 12,750 ſheep, and 800 goats, and only 3 carts and 3 ploughs in the whole diſtrict. The fiſhery ſeems to be even leſs productive than the agriculture, as the produce is eſtimated at only 50l. a-year. It belongs chiefly to Macdonald of Clanranald.

30. ARASAIG.—This territory (part of Inverneſs-ſhire) lyes to the north of the preceding diſtrict, between it and the country of Morrer, having Lochiel on the eaſt, the ſea on the weſt; and, being about 13 miles long from eaſt to weſt, and nearly 4 broad, may extend to about 50 ſquare miles. It is alſo a paſtoral country, inhabited by 810 people, almoſt all Roman Catholics, who have a ſtock of 56 horſes, 1435 cattle, 9915 ſheep, and 950 goats. It belongs wholly to Clanranald; and although abounding in good paſture, is an extremely rugged and mountainous country.

31. MORRER (the mainland, as diſtinguiſhed from islands),—in Inverneſs-ſhire, and belonging to Fraſer of Lovat, is ſurrounded by Araſaig on the ſouth, Loch Neviſh (a branch of the ſea) on the north, Lochiel's country on the eaſt, and the ſea on the weſt, having an extenſive freſh water lake, Loch Morrer, in the middle. It is about 14 miles long from eaſt to weſt, and about 6 miles broad, and will thus comprehend about 84 ſquare miles. The inhabitants are nearly all Roman Catholics, and amount to 928. It is chiefly a paſtoral country, being very mountainous, and has a good ſtock of ſheep and black cattle, beſides a number of goats.

32. KNOYDART, alſo in Inverneſs-ſhire,—is embraced by Loch Neviſh on the ſouth, Loch Hourn on the north, Glengary's country on the eaſt, and the Sound of Skye on the weſt; is about 10 miles long from eaſt to weſt, and 8 miles broad. The number of people is about 1000, of whom 850 are Roman Catholics. They live chiefly on the ſea-ſhore, where the ſoil is light, yielding tolerable crops of oats, bear, and potatoes. The hills are high, but afford, in general, good paſture for all kinds of cattle and ſheep; and there are a conſiderable number of deer. The country belongs to Macdonell of Glengary, and Macdonald of Scothouſe.

33. GLENELG,—the moſt northerly diſtrict of Inverneſs-ſhire on the weſt coaſt. It is ſurrounded by Loch Hourn on the ſouth, and the territory of Loch Shiel on the north, Glengary's country on the eaſt, and the Sound of Skye on the weſt, from which iſland it is diſtant at one place only a quarter of a mile. It is a mountainous country, but affords good paſture. There is alſo ſome good

arable land by the ſides of the lakes, rivulets, and branches of the ſea, on which the inhabitants, amounting to 1286, raiſe, in favourable ſeaſons, as much of potatoes and corn as ſerves them about nine months in the year; the other three months' food they have to purchaſe from a diſtance, and in unfavourable ſeaſons they require ſtill more. But their hills maintain great numbers of fine cattle and ſheep, whilst the ſea affords them fiſh in great abundance: 30,000 barrels of herrings have been caught in Loch Hourn in a ſeaſon. Glenelg is about 7 miles long, and nearly as broad, extending to about 45 ſquare miles in all.—It belonged till of late to the laird of Macleod.

District VII.

1. **Blackisle, Ealandu, Ardmeanach,** and **Edderdaile** (for by all theſe names it is known),—is that country, almoſt an iſland, ſituated between the Friths of Beauly and Cromarty. It comprehends the whole of the ancient ſhire of Cromarty, part of Roſs, and a detached part of the ſhire of Nairn, in an extent of about 120 ſquare miles.

2. **Ferindonald** (or Donald's Country), the country of the Monroes in Roſs-ſhire,—is ſituated on the north ſide of the Cromarty Frith, and comprehends the two pariſhes of Kiltearn and Alneſs, and is remarkable for the diverſity of its ſcenery, conſiſting of hills, mountains, lakes, rivers, woods and plantations, and ſome very fertile and highly cultivated lands. It abounds in gentlemen's ſeats and pleaſure-grounds, chiefly poſſeſſed by the reſpectable and very ancient clan Monro, who have had the property of this fine rural country ſince the days of Malcolm II., about 800 years ago.

3. **Glenshiel,**—a narrow ſtrath in the county of Roſs, being the moſt ſoutherly territory in that ſhire, upon the weſt coaſt. It is ſituated between Glengary and Kintail, and is a continuation of the vale of Glenmoriſton in Inverneſs-ſhire, the two glens meeting at Loch Clounie in the middle. The military road from Fort Augustus leads through it to the old barracks of Bernera in Glenelg. Part of it extends down upon the west coast of Loch Duich, between that branch of the sea and Glenelg: but the rest is wholly a pastoral country, occupied by the clans Macrae and Maclennan, keen partisans of Seaforth, the proprietor of the territory, which is about 16 miles long, and varies in breadth from two to six miles. There is a very handsome breed of black cattle in this wild and recluse glen.

4. **Kintail.**—The country of the Macraes, is situated next to the preceding valley, on the west coast of Ross, between Loch Duich and Loch Ling, nearly opposite to the east corner of the Isle of Sky. It is a high mountainous district, about 16 miles long and 8 miles broad, and almost inaccessible by land. It abounds in black cattle of an elegant form and very hardy, and

has great store of fish in its different lochs. The people amount to 850; but although it has been in the possession of the Seaforth family for some centuries, there is not a single Mackenzie in the whole territory.

5. LOCHALSH.—This is another of Seaforth's ancient territories, situated immediately north of the preceding, and on the west coast, between Loch Ling or Luing, and Loch Carron. It is 18 miles long and about four miles broad, inhabited by 1334 people, who have a stock of 3315 cattle, 2475 sheep, and a number of goats. The air is in general mild, and the soil on the declivities of the smaller hills is tolerably fertile, producing oats, bear, potatoes and peas, but seldom enough to maintain the people. The cattle are the greatest source of wealth in this territory, as great numbers are sold yearly. There is also a considerable quantity of butter sold, which is said to be of the richest quality and finest flavour.

6. LOCH CARRON.—This is the next territory to the north on the west coast of Ross. It is about 20 miles long from S. W. to N. E., and from 4 to 5 miles broad, having either the sea-loch of Carron, or the water of Carron, in the middle, the whole way. It is a beautiful Highland country, with excellent pastures, and some tolerably fertile land. It belongs to three proprietors of the names of Matheson, Macdonald and Mackenzie. There is a good salmon fishery, and at times vast shoals of herring in the loch.

7. APPLECROSS,—the fanciful name of a Highland territory, on the north of Loch Carron, ſituated between Loch Kiſhorn on the ſouth, and Loch Torridon on the north, both which branches of the ſea cut deeply into it, and give it a triangular form of about 12 miles on a ſide. The name it is known by in the country is *Comrick*. Applecroſs was a name given to it at no diſtant period; and, in alluſion to the name, there are five apple trees planted croſswiſe in the vicinity of the preſent church. It is a rugged and mountainous country, with a ſmall proportion of arable land, yet has fine paſtures in its ſequeſtered valleys, where conſiderable herds of native deer ſtill roam at large. The fiſheries on its coaſts are very abundant; and theſe, with the making of kelp, are the chief employment of the hardy natives, whoſe numbers have doubled within the laſt fifty years, and now amount to 1734.

8. GARELOCH.—This extenſive territory is ſituated between Loch Torridon on the ſouth, and Loch Mari on the north; and is 25 miles long, and in ſome places 12 miles broad. It is a mountainous and barren country, but has been remarkable for ages as an excellent fiſhing ſtation; which affords much ſhelter from the many bays that cut deeply into it on all ſides. This, as well as the preceding territory adjoining, belongs to the Mackenzies: ſeveral gentlemen of that name reſide in it.

9. GROYNARD, or GREINORD, (the gloomy port), to the north

of Gareloch. It is ſituated between Lochs Ew and Mari on the ſouth, and Loch Broom on the north, a diſtance of about 16 miles, and ſtretches inland from 20 to 25, ſo as to comprehend an area of nearly 400 ſquare miles, part of which is in Cromarty, and part in Roſs. It is indented by deep inlets of the ſea, and contains ſeveral freſh-water lakes and mountain ſtreams. Along the ſides of theſe are ſtrips of tolerably fertile arable land, but ſtill not ſufficient to ſerve the inhabitants in bread corn, which they have every year occaſion to purchaſe from other places. Much wealth ariſes here from the fiſheries, which are among the very beſt in Scotland.

10. COYGACH, (the fivefold diſtrict, from its five diſtinct glens).—This territory, which is altogether in the ſhire of Cromarty, is ſituated between Loch Broom on the S. W., and the county of Sutherland on the N. E., with the ſea on the weſt, and what is called the Fruwater in Roſs-ſhire on the eaſt or S. W. It is about 20 miles long, and 8 miles at an average broad, thus extending over 160 ſquare miles. It contains ſeveral high mountains, many freſh-water lakes, and ſtreams, with ſundry inlets of the ſea. It makes part of the fiſhing ſtation of Loch Broom, and has a population of 1600 ſouls, of whom about 400 reſide in the town of Ullapool.

11. ASSINT, (the hinder diſtrict, or back country). This lies to the north of Coygach; and is the weſt diviſion of the county of Sutherland. It is about 12 miles broad, ſtretches inland nearly 16 miles, and is indented with ſeveral ſmall branches of the sea. It is a mountainous and barren country, abounding in freſh-water lakes and ſtreams, moſſes and marſhes; ſo as not to have more than one part in 100 in cultivation, or capable of it; and what is in culture is performed more with the ſpade than the plough. It is remarkable, however, for ſeveral lucrative fiſheries, and has a very conſiderable population, amounting to about 3000, chiefly of the names of Nicol, Macnicol, and Nicolſon. It all belongs to the Counteſs of Sutherland. There is a remarkable promontory on the coaſt of this country, called the Ru-ſtour of Aſſint, or the great headland or point of Aſſint, projecting ſeveral miles into the ocean.

12. EDDERACHYLIS, (or the country between the *kyles* or branches of the ſea),—is ſituated to the north of Aſſint, being ſeparated from it by an inlet of the ſea, called Kylis-cowie, and from the territory of Aſhir by another branch of the ſea called Loch Laxford. It is about 12 miles long from ſouth to north, and 10 broad from weſt to eaſt. Few places have a more dreary and rugged appearance than this country, which chiefly conſiſts of almoſt inacceſſible mountains, that preſs cloſely upon each other; but it nevertheleſs produces abundance of excellent paſture for black cattle, ſheep and goats; and maintains numerous herds of different kinds of deer. Here are many good harbours, and much fiſhing on the coaſt. The number of people (generally of the names of Morriſon, Macleod, and Macauley) in 1793 was found to be 1024; of horſes 351; of cattle 2573; of ſheep 2629; and of goats 1307.

The rent only about one-third of a penny the acre. Lord Reay is the ſole proprietor. Since 1793 the rent has been more than tripled; and the deer in a great meaſure all over the Reay eſtate have been extirpated, and ſheep ſubſtituted in their place.

13. ASHIR, (erroneously written and pronounced *Oldshores* by strangers),—is that mountainous district in the north-west corner of Scotland, extending from Eddcrachylis north to Cape Wrath, about 10 miles long and 8 miles broad. It forms part of the parish of Edderachylis, and its population and stock are included in the preceding article.

14. STRATHNAVER, in the largest sense, is the north-east division of the county of Sutherland, extending 45 miles from east to west, and 25 miles, where broadest, from south to north, and containing an area of about 970 square miles of land, exclusive of numerous inlets of the sea and fresh-water lakes. It is divided into three parishes, with a population of 6806, which is at the rate of only 7 to the square mile. The arable land is contained within very narrow limits, not exceeding one part in 100, and only to be met with by the margins of the sea, and rivers. The pastures, however, are good, the whole country standing on lime rock, which occasions the finest white clover to grow even on the mountains. These till of late were pastured by numerous herds of deer, but now more generally by sheep. Strathnaver Proper, in a more restricted sense, is the district on each side of the Naver, containing 2000 inhabitants, and 1600 acres of arable land. It gives the title of Baroness to the Countess of Sutherland; but Lord Reay is almost the sole proprietor, and his principal place of residence is at the house of Tongue, a stately mansion amid woods and gardens, by the bay of Tongue in this country.

BRANCH II.—THE HEBRIDES, OR EBUDES.

IT is proposed, without enumerating the whole of these islands, to state the leading features of the principal ones, commencing with those on the coast of Ayrshire called the Cumbraes, and belonging to that county.

The CUMBRAES, or the Isles of Meikle and Little Cumbrae.—They are situated from 1½ to 3 miles off the coast of Ayrshire, and nearly the same distance from the Isle of Bute. About one half of the largest is arable, producing wheat, every other kind of corn, and potatoes, turnips, and artificial grasses, all well cultivated. It contains nearly four square miles; the smallest only one mile, and is employed in pasture, and in raising numbers of rabbits, containing only four or five families, who have the charge of a light-house. It consists chiefly of basaltic rocks, and belongs wholly to the Earl of Eglinton. The largest belongs to the Marquis of Bute and the Earl of Glasgow.

The ISLE of BUTE.—This is situated on the Firth of Clyde, near to Cowal in Argyleshire, from which it is separated by two channels little more than a mile over. It is 15 miles long from S.E. to N. W. and four miles at its greatest breadth in a cross direction. It comprehends in all about 40 square miles, of which one half may be stated as in cultivation; the other half consists of hills, and some remaining morasses not yet reclaimed. The soil in general is light and sandy, and well adapted to agriculture; the crops of barley, oats, turnips, &c. being inferior to those of few districts in the kingdom. Even wheat is raised in the south end of the island, where the country is generally enclosed with ditch and hedge, and is under a very proper system of husbandry. Limestone and slate are both plentiful; but coal has not yet been found. Herrings abound in the surrounding seas, and that fishery is a great source of wealth to the inhabitants. They are indeed fond of a seafaring life in general, and have from 80 to 100 decked vessels, several of which are above 100 tons burthen. The number of people is 6847. They generally speak the Gaelic language. The Marquis of Bute is proprietor of the greater part of this island, and has a most elegant mansion, viz. *Mount-Stewart*, near the south end, within 200 yards of the sea, in full view of the Clyde, and much ornamented by wood. Conjoined with Arran, this forms a distinct county, and alternately with Caithness sends a member to the Imperial Parliament.

ARRAN.—This island is also in the Frith of Clyde, five miles south from Bute, five miles east from Kintyre, and nine miles west from the coast of Ayr. It is about 21 miles long from south to north, and nearly 10 miles where broadest from east to west, and extends over a surface of about 117 square miles. It is an extremely rugged and mountainous country, of which there is not above one-fifth part arable, and even that very indifferently cultivated. The only crops cultivated are oats, bear, potatoes and flax. The number of people is 6180, all of whom speak the Gaelic language. Game abounds greatly in this island, more especially grouse, which are astonishingly numerous on the mountains. In these also are found some beautiful rock crystals or cairngorums. There is much limestone and slate, and some appearance of coal. The fisheries are most abundant, particularly of herring, which is prosecuted to great advantage. Arran has two remarkably fine harbours, Lamlash on the east side, and Loch Ranza on the north end. It gives the title of Earl to the Duke of Hamilton, who is proprietor of nearly the whole island.

The principal islands belonging to Argyleshire, are,

1. GIGHA,—an island about six miles long, and two miles broad, lying off the west coast of Kintyre, six miles south of the entrance into Loch Tarbat. It extends, in conjunction with the small adjacent isle of Cara, to about 5 square miles,

of which 30 parts in 100 are in a high degree of cultivation, under the fostering care of the proprietor, Mr Macniel, of a Hebridian clan, that are conspicuously active and enterprising as cultivators of the soil. There are neither foxes nor weasels in the island. There is a rich fishery around it, and much kelp is made on the shores. There is a good breed of cattle. The number of people is 850; and seems to be increasing rapidly.

2. ISLA, is one of the best, although not the largest, and among the most southerly of these islands. It is situated about 12 miles west of the nearest land in Knapdale of Argyll, and about 20 miles north of the isle of Rathlin, off the coast of Ireland. Different accounts are given of its extent. Arrowsmith makes it about 22 miles long from south to north, where it terminates in a narrow point, and about the same breadth from east to west over the broadest part near the south extremity, the large bay of Loch-in-daal entering deeply into it from the south. Islay, according to the very accurate map for the Ardrossan Canal, is 31 miles from N. to S. and its greatest breadth 21 miles. According to Mr Duncan's elegant map in the Scotch Itinerary, its greatest length is 28 miles, and its breadth, as above, is 21. This is not only given in different dimensions, but its position is not accurately laid down. From Mr Macdonald's recent Survey, it appears to extend, in all, over an area of about 308 square miles, of which about eight miles may be stated as fresh-water lakes. About one-fourth part of the land may be stated either as in actual cultivation, as under wood, or as rich pastures. There is an excellent breed of active horses in this island, of which there are from 250 to 300 exported yearly, chiefly to Ireland; whilst the black cattle, in number, it is supposed, about 12,000, are in high esteem with the English graziers, who purchase about 2640 annually. There are but few sheep. The linen manufacture is carried on to great extent; for besides supplying themselves, the people of Isla export to the value of 5000*l.* of linen yarn yearly. Kelp is made to the extent of 200 tons. There are some lead mines wrought, but coal has not been found, which operates against that species of employment from the scarcity of fuel fit for the purpose. Isla abounds greatly in game, both of the land and the water kind. It is well supplied with peat from its mountains; and the agriculture of the country is now beginning to be conducted with great energy in the most improved mode: and from the excellent roads and numerous bridges which have of late been made, a ready communication from one place to another, so essential to the prosperity of a country, is in a great measure enjoyed. It belongs principally to Mr Campbell of Shawfield, who resides occasionally; and the rent, estimated at 16,000*l.*, is more than the purchase money half a century ago. Marl and limestone abound greatly, and, what is not very common among these western isl-

ands, there is a considerable extent of natural wood on the east shore, and some thriving plantations around Isla House, near the prosperous village of Bowmore, at the head of Loch-in-daal. There are many fresh-water lakes and small streams abounding in fish, while the surrounding ocean holds out a supply from the greater fisheries that is inexhaustible. But the inhabitants of Isla, unlike to the rest of the western islanders, are more attached to the cultivation of the soil than to the fisheries. The number of the inhabitants is 11,500, and seems to be fast increasing. Many of them are in genteel circumstances, and live in as elegant a style as in any country part of Scotland.

3. COLONSAY, conjoined with Oronsay, from which it is separated by a narrow sound, dry at low water, is situated about 12 miles west from the isle of Jura, and about six miles north by west of the isle of Isla. It is about seven or eight miles long from south to north, and from one to three miles broad, containing about nine square miles of land, besides some fresh-water lakes. The soil is in general light and fertile, and in a most respectable state of cultivation, through the example and influence of Mr Macniel the proprietor, who cultivates potatoes, turnips, and artificial grasses, on a great scale, whilst the natural pastures of this fine island are uncommonly rich. This will account for the excellency of the black cattle, which are in high reputation with the graziers. There is a hardy race of small horses, but very few sheep. There are many rabbits, but neither hares nor partridges, and but few grouse. There was anciently a monastery in the Oronsay quarter of the island, of which the ruins are yet remaining, and next to those of Iona are supposed to be among the finest monuments of antiquity in the Hebrides. The population of Colonsay is increasing, and amounts now to 860. About two-fifths of the island is in cultivation.

4. JURA, a much larger island, lies off the coast of Knapdale, about five or six miles distant, and to the N. E. of Isla, from which it is separated by a narrow channel of about a mile over. It is above 20 miles long from S. W. to N. E., and is from two miles to seven miles broad, comprehending an area of about 84 square miles, including some lakes. It is an extremely mountainous and barren country, more especially on the western side, which is altogether uninhabitable. The inhabitants of the island, amounting to 1200, live altogether on the east side, on a narrow slip of flat land near the shore, where, on a thin meagre soil, they cultivate, with difficulty, very defective crops of oats and bear, but succeed somewhat better with potatoes and flax. The whole lands in cultivation amount to about seven parts in 100. The live stock are horses and cattle, both diminutive in size; small sheep with uncommonly fine fleeces; and a number of shaggy goats. The game are red

deer, grouse, ptarmagan, and blackcock; but there is neither partridge nor hare, and but very few rabbits: eagles abound, nestling among the inaccessible rocks, and are very destructive to the kids and lambs. The minerals are iron ore, manganese and slate. The Paps of Jura are four remarkable and high pointed hills, seen at a great distance. There are about 80 or 90 tons of kelp annually made. Jura belongs to two proprietors, Mr Campbell of Jura, and Mr Macniel of Colonsay. This latter gentleman keeps his part of it entirely in pasture.

5. Islands of LORN.—These are Scarba, Lunga, Luing, Seil, Shuna, Eisdale, Kerrera, and several others still smaller. They extend altogether to about 30 square miles, of which about 35 parts in 100 are in cultivation, and the population amounts to about 1200 souls. They are valuable even in an agricultural view, perhaps still more so as fishing stations, and some of them, as Eisdale, for slate quarries. Indeed, owing to their situation, and the easy conveyance by sea, instead of a land carriage, these are perhaps the most valuable quarries of that material in Britain. The whole island does not exceed 50 Scots acres, yet it has for ages been famed for its slate, and the number exported annually is upwards of 5,000,000. The value of those shipped off in 1807 was 9066*l*. 12s. Sterling.

6. MULL.—This very extensive but rugged island is situated off the coast of Morvern, being divided from it by what is called the Sound of Mull, a narrow strait of about 20 miles long, and from half a mile to three miles in breadth. It is extremely irregular in its outline, being much intersected by deep bays and friths. The greatest length of land in this isle is about 30 miles along the south coast, and it is where broadest about 22 miles from south to north; the whole extent, measured carefully on Arrowsmith's map, is 301 square miles, including some freshwater lakes. Were we to credit what travellers report on this subject, it should seem to be more than three times this extent. But these appear to calculate distances from the *time* they take to traverse a country; and in this island, travelling is always an extremely tedious process, from the total want of roads, and the many turnings and windings that must be taken to avoid morasses, torrents and precipices. It is in general a very mountainous and rugged country, much more adapted to pasture than tillage, and is besides greatly cut up by a multitude of mountain streams, which often descend in torrents to the surrounding ocean. The pastures however are good, and maintain a great number of live stock, of which the cattle, a most valuable breed, are estimated at from 8000 to 10,000; the sheep at 18,000, and the horses, strong but small sized, from 2000 to 3000, besides a multitude of goats and hogs. Among the wild animals there still remain some herds of red deer, which in severe winter

storms descend from the hills, and frequently mix with the cattle in the farm yards. Wild-fowl are also very abundant. And there is a remnant still of the ancient forests to be met with on the eastern side of the island, consisting of oak, birch, ash, &c. There are also some thriving plantations. The minerals are marble, limestone, and coal. There appears to be abundance of fish; but the people do not seem to make great exertions to avail themselves of this advantage. They make kelp, however, to the extent of about 600 tons yearly. The chief harbours are at Tobermory and Aross, both post towns; the first is a considerable village, belonging to, and under the patronage of the Society for extending the British fisheries. The Duke of Argyll is the greatest proprietor, and several gentlemen of the name of Maclean and Macdonald have the rest of the island. The people, cheerful, innocent and happy, amount to 9220, and the proportion of land in cultivation is estimated at eight parts in one hundred. There are several considerable islets dependent on Mull, such as Ulva, Gometra, Icolmkill, &c. all inhabited, and of considerable fertility, besides a great many others uninhabited. The most remarkable of these is Iona, or Icolmkill.

7. I, IONA, or I-COLM-KILL, so remarkable for its magnificent ruins, and for being the burial place of so many Scotish, Danish, and Irish sovereigns, and other chiefs, is about four miles long, and from two to three miles broad, and is situated off the S. W. corner of the isle of Mull, from which it is separated by a narrow sound. From all accounts, its venerable and ancient remains are highly worthy of attention. Although every care to keep them in preservation is bestowed by the family of Argyll, (who have on several occasions interfered to prevent dilapidation, and have latterly enclosed the whole within a high wall,) yet they are fast mouldering into decay. This is not much to be wondered, when we consider that it is more than 1200 years since their erection, and that they are no doubt the most ancient buildings of whose origin any thing certain is known in Scotland. With respect to agriculture, the island is either all arable, or consists of good pasturage. It is very populous for its size, having upwards of 320 inhabitants. It belongs to the Duke of Argyll.

8. STAFFA.—A rock so highly celebrated for its wonderful basaltic pillars and caves, is situated about five miles off the west coast of the isle of Mull, at the entrance into Loch-na-Keik. In an agricultural point of view it is of no importance, except that it feeds a few cattle.

9. TYREE.—This island is situated 14 miles west from the nearest part of Mull. It is about 13 miles long from south-west to north-east, and of various breadth, from five miles to less than one, as it is much indented by the sea. Altogether it measures 36½ square miles of land, besides some fresh-water lakes. About

30 parts in 100 are in cultivation, interspersed with knolls and small green hills, not exceeding 300 feet in height, so that this island may be reckoned among the most fertile of the Hebrides. Yet the husbandry is still very rude, but may be expected to improve, as some good examples are now beginning to be introduced. It has a most ample live stock; 1500 horses, 2000 cattle, 800 sheep, and 1300 swine are stated to be the amount. The population in 1801 was 3290. The minerals are ironstone, limestone, and marble in beautiful variety. Fish is very plentiful along the coast; but fishing is little practised by the natives. They make however much kelp. This island abounds to profusion in game; and it is singularly happy in a total want of all noxious reptiles. It belongs to the Duke of Argyll.

10. COLL.—This island is distant seven miles west from Mull, and two from Tyree, lying in the same direction, so as to seem almost a part of that island. It is 15 miles long from south-west to north-east, and where broadest is about three miles, and comprehends, in all, an area of about 28 square miles. Of this about one-third part is in cultivation; the rest is hills, rocks, sands, lakes, &c. There are however no hills of consequence, the highest being only 450 feet; but the face of the country is much diversified by knoll and vale. It yields good crops of bear, oats and potatoes, and of late turnip and even wheat. This last is sown only by Maclean of Coll, who is proprietor of about four-fifths of the island, and who has done much towards its improvement, and for the welfare of his people. There is no growing timber, but there are very thriving fruit trees and berry bushes in the gardens. Rabbits are numerous, and a pair of hares (brought to it lately) have increased wonderfully. Formerly it was overstocked with sheep; but these interfering too much with the recent improvements in agriculture, have been reduced to about 500, which is also the number of horses. To cattle, the people are more partial, as the natural pastures are excellent, which has enabled them to rear about 1500, of a good kind, of which they export about 220 yearly, and kill about 80 or 90 for home consumption. It abounds with good peat. There is a lead mine of a promising appearance, and also marble in great abundance. The fisheries are most ample, but not prosecuted to any extent. About from 80 to 100 tons of kelp are made yearly. The number of people is about 1100.

11. LISMORE, (or the Great Garden), is situated in the mouth of the Linnhe Loch, at the west entrance of the Caledonian Canal. Is is about 10 miles long from S.W. to N.E. and from a mile to two miles broad; and, including the adjacent isles of Ericksa, Shuma, and several smaller islets, extends in all to 10 square miles. It is remarkably fertile, and one-half of it at least is in cultivation, bearing good crops of bear, oats and potatoes,

and of late, turnip and artificial grasses. A singular circumstance is mentioned in the Statistical Account of the parish, that is worthy of being noticed, namely, that about 90 years ago an experiment was made to ascertain if sea trout would live in fresh-water lakes; and it succeeded so well, that from a few that were then put into a lake in this island the breed has become numerous, and retains itself perfectly distinct, without a possibility of any connexion with sea water. The number of people in this and the adjacent islets is estimated at 1410.

12. MUICK,—lies about four miles N. W. from the nearest point in Ardnamurchan. It is about three miles long, and from one-fourth of a mile to two and a half miles broad, containing about three and a half square miles of good pasturage, and excellent corn land, remarkable for its fertility. The people amount to 256, and speak the Gaelic language, but wear the Low-country dress. This island is extremely scarce of fuel; neither has it a mill for grinding the corn, so that the inhabitants endure great privations in these respects. The rent in 1796 was L.232, exclusive of kelp. It belongs to Clanranald.

13. RUM,—is situated about 14 miles north by west of Ardnamurchan, but is seven miles west from the point of Sleat in Skye. It is eight miles in length from north to south, and seven miles at its greatest breadth from east to west, comprehending an area of 34 square miles, of which not more than six parts in 100 can be stated as in cultivation, or at all capable of it, as Rum is the most mountainous and rugged of all the Hebrides, not even excepting Jura. It is remarkable for an excellent breed of small higlimettled horses, of which, at times, a considerable number are exported for sale, and also for a small breed of sheep, whose wool sells at a high rate. The number of people is about 600. It belongs to Maclean of Coll. There were formerly extensive woods in this island, (and it was then called *The kingdom of the Wild Forest*), which were well stocked with deer. But both woods and deer have disappeared.

14. CANNA.—This is the last Argyll-shire island to be noticed in this account. It is situated about four miles west of the preceding isle of Rum, nine miles south of the Isle of Skye, and about 25 miles N. W. from Ardnamurchan, the nearest part of the mainland of Argyll-shire. It is about five miles long from east to west, and its greatest breadth is a mile and a half, extending altogether to four square miles of surface, (including the small isle of Sandy adjacent). About 45 parts in 100 are in cultivation. The soil is reckoned fertile, being a decomposition of basaltes and plumpudding stone; even the hills, which rise about 600 feet, are fine green pasture, and wood has of late been planted in this island and found to thrive. The men of Canna are remarkable for their skill and intrepidity in fishing, and make

a good figure in that branch of employment. The number of the people is about 400. It belongs to Clanranald.

Several islands belong to Inverness-shire, viz.

1. EIG, situated six miles west from the point of Arasaig on the Mainland of that county, and five miles south from the point of Sleat in Skye. It is about six miles long from north to south; and four miles, at its greatest breadth, from east to west, containing in all an area of about 13½ square miles, of which about 40 parts in 100 may be in cultivation, and the rest is pretty good hill pasture. Some elegant small horses on this isle are in request for the saddle, and the cattle and sheep are reckoned good. The number of people amounts to about 536, but they labour under the great disadvantage of having neither wind nor water mills to manufacture their grain, and consequently suffer much inconvenience, and frequently loss, in transporting it backwards and forwards to the mainland for that purpose. Nobody has yet suggested to them the practicability of getting it done by horse machinery, or by sea mills. It belongs also to Clanranald; and, along with Muick, Rum and Canna, composes what is called the parish of *Small Isles*, one of the most laborious ministerial charges in Scotland.

2. SKYE.—This island, in point of extent, is the second in rank among the Hebrides, and is perhaps the first in regard to importance. It is separated on the S. E. from the mainland by the Sound of Skye, a channel about 24 miles long, and from half a mile to six miles broad; and on the N. W. it is separated from the *Long Island* by a channel called the Minch, from 15 to 20 miles broad. Skye, from the point of Sleat in the south, to the *Aird* of Trotternish in the north by west, is 45 miles long, and it is nearly the same distance to Vaternish Point in the N. W. The greatest breadth, which is towards the N. W. is 24 miles; but this includes two broad bays that penetrate the island deeply in that direction. Indeed it is so much indented by many arms of the sea, that no part is more than four miles and a quarter from salt water. The whole contents, measured carefully from Arrowsmith's map, amount to 535 square miles, including about 10 square miles of fresh-water lakes. The land will therefore extend to 336,000 acres. The general aspect of this island is extremely mountainous, insomuch that there is not above 12 parts in 100 in cultivation, or capable of it; and these are chiefly in small patches and strips, by the margin of the different bays, except in the most northerly extremity, in the parish of Kilmuir in Trotterness, where for four miles the land is flat, the soil fertile and well cultivated, and the farms enclosed and divided. But, with all the great proportion of hill and mountain, it does not follow that barrenness or sterility is the consequence. On the contrary, these hills, so widely extended and towering so proud-

ly to the skies, are in general of considerable value, from the excellent pasture in which they abound. This is particularly the case in the central and southern quarters, where the hills of Cullin, founded on a bed of limestone, produce an uncommonly rich herbage, on which are fed a remnant of the ancient herds of deer for which this island was formerly famed, and which continue still to roam at large in native freedom from brow to brow of these verdant heights. Most of these hills in ancient times were clothed with wood. But there is little forest timber now remaining in Skye; there being hardly any except in the south-east coast of Sleat, where there are still some stools of natural wood, consisting of oak, ash, elm, birch, together with alder, willow, and other aquatics.

The *crops cultivated* are bear, oats, potatoes, and some flax. Artificial grasses and turnips are little known; but they are partly introduced, and it seems probable that the cultivation of them will soon become more extensive, as they are so very essential to the welfare of the cattle, which is the staple *land* commodity of the island. In the gardens and kail-yards most of the esculent vegetables cultivated on the mainland are raised with great success, as are also the smaller fruits.

Live Stock.—This is estimated at 4000 horses, of a small but hardy and durable race; 18,000 cattle of an excellent breed, of which about 3800 are annually exported, and they form the principal export of the island. The number of sheep is guessed at 40,000; but this is little else than conjecture, as it is hardly practicable to ascertain the real amount. They consist partly of the *native* yellow-faced kind, partly of *Cheviots*, and partly of the black-faced *Lintons*, which are here the great favourites. Several thousands of them are annually exported. *Hogs*, *goats*, and *rabbits*, (nearly all equally wild), are in considerable number, but are so little under control, as to afford no permanent source of revenue. *Game* of all kinds is abundant, but is thought to decline in proportion as the country is getting more and more into cultivation. There are two kinds of serpents, or vipers, both reckoned very noxious.

In the surrounding seas, which embrace 750 miles of coast, there are myriads of fish; particularly herring, maekarel, turbot, scate, ling, cod; also shell-fish in great abundance, such as oysters and lobsters, &c. So that combining the situation with the facilities, the men of Skye have an opportunity of enriching themselves by the fisheries beyond any other islanders in Scotland, and in fact they apply themselves to them with considerable industry, and frequently with great effect. Sometimes, however, they are miserably tantalized with a profusion of fish, when they cannot command a single ounce of salt to cure them, owing to their distance from the Customhouse, and to the complicated salt-duty regulations, which shut them up completely from either bettering their own circumstances, or promoting the general prosperity of the nation, by this otherwise abundant bounty of Providence.

Kelp is made annually to the extent of 500 tons; and the manufacture of this article is capable of being greatly increased, to the no small emolument of the natives, as well as to the increase of the proprietors' rents.

Skye has been hitherto limited in its internal intercourse, owing to the want of good roads, and this disadvantage does not admit of being easily removed; not merely from the inequality of the surface, but from being so much cut up with brooks and rivulets, that, on every shower, swell into torrents, which would require more bridges to pass them in safety, than people could well conceive, who live in a flatter country, and a less humid climate.

The number of people in Skye, which (notwithstanding of a continued emigration) is still increasing, was 17,775 in 1809, being at the rate of 33 to the square mile; and if limited to the arable or cultivated land, (and it is there only where they reside), would be 275. It has for ages been the property of, and still continues in the great clans Macdonald, Macleod, and, till of late, Mackinnon. From the first of these, there has at a more recent period sprung up the kindred clan of Macalister. The people, ingenious, shrewd, and active, are nearly all of the Established Church. Among them, reside a considerable number of gentlemen, that have been in the army or navy, cadets of the chief families; whose manners, formed on the most perfect model, have given a polish to those of the people at large, which is to be remarked in the behaviour even of the lowest peasant. In fact, every man in Skye seems to be a gentleman; whilst in the demeanour of the females, there is an ease and an affability, that no person could expect in a country so remote, and having so little communication with strangers. Mr Macdonald, in his valuable Survey, well observes, that " it is in truth a singular island, well deserving the attention of the geologist and natural historian, and capable, by nature, of one day astonishing the patriot and political economist."

3. RAAZA.—This island is 14 miles long from south to north, and from 1 to 3 miles broad, comprehending in all 31½ square miles of surface. It is situated off the east coast of Skye, at the distance of from 1 to 4 miles, and on the other side is separated from the Mainland of Ross by a channel of from 4 to 6 miles over. About 12 parts in 100 are in cultivation, and also of considerable fertility, bearing good crops of oats and bear, but especially of potatoes. It belongs to one of the chief branches of the family of Macleod, who resides upon it, in an elegant mansion, amid a considerable extent of wood and plantations. The proprie-

tor has done much to improve both the agriculture and the live stock of the island, and has introduced green crops and artificial grasses, as well as the best kinds of seed corn. The island is nearly encompassed with a bold and precipitous shore, and many high sharp-pointed rocks, the habitation of sea-fowls. It abounds in limestone and porphyry.

About a mile and a half north of this is situated the Isle of *Rona*, five miles long, and one mile and a half broad; and two miles south from it is the isle of *Scalpa*, 4 miles long, and nearly 3 miles broad. There are several other smaller islets dependent on Skye or on Raaza, and which have nearly the same general features.—The whole are inhabited by about 1250 people, remarkable for dexterity at fishing, and an inclination to a seafaring life.

All these islands, hitherto described, are not only in distinct ranges from each other, but vary both in internal circumstances and outward features; but what remains of the Western Isles to be taken notice of, seems to have a great degree of affinity, both in position and aspect, as if the whole had been originally one island, although now consisting of 100 or upwards. The name by which they are distinguished, being *The Long Island*, strengthens this conjecture, though it must be acknowledged that there is not even a tradition of there ever having been but one single disjunction among them.

The Long Island, is situated between 56° 48′ and 57° 58′ of north latitude, which, if stretching due south and north, would give a length of about 81 miles; but as it stretches from S. W. by W. to N. E. by E., the length in all from Barra-head in the south, to the Butt of Lewis in the north, is 128 miles. The breadth is very various, as shall be noticed in the following concise description, in detail, of the different groups into which this long range of islands is disposed.

1. *Barra.*—This, with its dependent islets, is the most southerly group of the Long Island. It is situated directly west from the district of Morrer in Inverness-shire, at the distance of 65 miles. It is 8 miles long from south to north, and 6 miles, at its greatest breadth, from east to west; but being extremely irregular in the outline, the whole surface extends only 21 square miles, including about 2 miles of fresh-water lakes. The dependent islets are these:—on the south, Vatersay, Sanderay, Pabbay, Mingalay, and Berneray, or Barra-head; and on the north, Flattay, Wiay, Helesay, Gigay, Fuddia, and several smaller isles, extending in all to about 10 square miles; so that the whole extent of this cluster will amount to about 31 square miles.

The general aspect of these islands is mountainous, but with a considerable portion of arable land, (perhaps a fifth of the whole), producing bear that yields from 10 to 15 seeds; potatoes, from 15 to 20; a few meagre black oats, and a little rye; but altogether not sufficient to serve the inhabitants, who amount to 1969, this being the most populous part of all the Long Isle. There is exported yearly 250 head of cattle, (a small breed); about 200 tons of kelp: And from the fisheries, to which the people apply with great industry, they sell in the Glasgow market 30,000 dried ling yearly, at from 50*l.* to 60*l.* the thousand, carrying them thither in their own fishing-boats. There is also a great abundance of other fish, such as cod, herring, &c. and an astonishing quantity of shell fish, especially of cockles, which are collected in hundreds of horse-loads at a time, as the people live much upon them in the summer season, and from the shells they also procure the finest lime. There are many excellent harbours among these islands, so that few places are better adapted for a fishing station. The whole has belonged for many centuries to the family of MACNIEL, the head of the Clan of that name in Scotland, whose chief place of residence is here, and who, in the same spirit of improvement that has spread a lustre on the name, has lately introduced many good practices both in the cultivation of the soil, and in the rearing of cattle. His people, who are nearly all Roman Catholics, live in great happiness under his fostering hand. This class of isles is included in Inverness-shire, and also the whole Long Island, except that part of it called Lewis, which belongs to Ross.

2. *South Uist.*—This island is situated about 6 miles N. E. of Barra. It is 19 miles long from south to north, and is in some places 9 miles broad; but the average does not exceed 6, as its whole contents are only 127 miles, including Ericksay, a considerable islet on its south coast. In this extent, is also comprehended about ten square miles of fresh-water lakes. The general aspect is very mountainous and barren, especially on the east coast, which rises high and precipitous. The productive lands, which seem from Mr Macdonald's account to be about one-fifth part of the whole isle, are nearly all situated on the west side, which shelves downwards towards the sea, terminating in a sandy beach. This indeed seems to be the general position of the whole Long Island. The product is bear, oats, rye, and potatoes; but it is not sufficient to serve the people more than nine months in the year. The live stock consists (by estimation from the Statistical Account of the parish) of about 3000 small cattle, of which there are 450 exported yearly; of sheep, about 7000; of horses, about 800, very small, but incredibly strong; also some goats. Among the game, are deer and rabbits; grouse, woodcock, and wild pigeons; and of aquatic birds, there is not only every variety, but the quantity is beyond calculation. The fishery seems to be inexhaustible, and consists of the most valuable kinds of fish; and the natives are not wanting to their own interest, in prosecuting this lucrative employment. But, like to all places remote from the customhouse, their labours are rendered abortive, by the re-

gulations of the salt-duties, which frequently interfere and prevent them from enjoying the fruits of their exertions. There are some excellent harbours on the east coast, particularly Loch Boisdale and Loch Eynort.

3. *Benbecula.*—This is situated two miles north from South Uist, and is about nine miles in length from east to west, and six miles at its greatest breadth, in an opposite direction. It is surrounded with a multitude of islets, of which the principal are, two of the name of Grimsay, two of the name of Wiay, a Floda, and a Rona. Altogether, this group amounts to 43 square miles, including six square miles of fresh-water lakes. It resembles in almost every thing the aspect and circumstances of the preceding isle of South Uist. These two groups form only one parish, of which the population is 5500. The property is chiefly in the families of Boisdale and Clanranald.

4. *North Uist.*—This island is situated three miles north from Benbecula, with some smaller isles between them. It is 16 miles long from east to west, and 14 miles, at its greatest breadth, from south to north; and with its multitude of islets it comprehends altogether an area of 118 square miles, including several fresh-water lakes. The general aspect is cheerless and gloomy. A dark heathy surface, swelling into hills of no great altitude, composes by far the greater part of the island. The cultivated part is chiefly limited to a small strip of about one mile and a half broad, along the west and the north coast, which is indeed a pleasant tract, yielding in favourable seasons luxuriant crops of bear, and very rich pastures of red and white clover. The east coast, like to almost the whole of the Long Island, is one entire craggy precipice, except where it is broken through by the passages into the numerous bays and capacious harbours. On the west coast, there is no shelter for a vessel of almost any burden, even to a small boat, as the surge, in its course over a multitude of sunk rocks and breakers, frequently rolls in with a force that no vessel could withstand, exhibiting an impetuosity and violence altogether inexpressible, particularly during a westerly wind, which commonly prevails for two-thirds of the year. The crops cultivated are, bear, oats, potatoes, and some rye. The live stock consists of about 2000 cattle, 1600 horses, and 5000 sheep, besides goats. Kelp is made to the extent of more than 1200 tons yearly, and gives much employment to the people, who amount in number to 4012;—a sober, industrious, sagacious and acute race, and who are nearly all of the Established Church. Lord Macdonald is proprietor of the whole island; and about a fifth part of it may be stated as productive land.

5. *Harris.*—This great territory lies to the north of North Uist, at the distance of eight miles; but the intermediate space is so thickly sprinkled with smaller islets, as to make all seem the same

island. It is divided in the middle from south to north by a narrow isthmus, so low as to be covered at stream tides. That portion of Harris to the south is about 12 miles long from south to north, and seven broad in some places. The northern part is about eight miles broad from south to north, and 18 miles long in some parts from east to west. The whole, including a multitude of adjacent islets, extends to 191 square miles of surface, including 15 square miles of fresh-water lakes.

The general aspect is mountainous and rocky, excepting the west coast, which for the most part is flat, and also verdant even to the tops of the adjacent hills in the interior. But the east coast is extremely wild and rugged, appearing almost an entire congeries of bare rocks, the whole much indented with bays, harbours, and creeks. It is near the shore only that the country is inhabited and in cultivation; the inland parts are entire wastes, without a semblance of human industry or habitation. The cultivation of the soil is attended with the utmost labour, there being perhaps not 20 acres in the whole country capable of tillage by a plough; but it is cultivated by the *crooked spade*, an implement in universal use over all the Western Islands. Even the sea-weed that the people use here for manure must be carried on their backs to the different patches of arable land, which lie frequently in such inaccessible and detached places, that even their hardy and sure-footed small horses could not go to them. And yet, with all this hard labour, the whole combined crop of oats, bear and potatoes, will frequently not exceed 2000 bolls in a year, after reserving the seed; and in some years it is still less. The number of cattle is estimated at 2460; of sheep, at 11,000; of goats, 250; and of horses, 1000; all of the most diminutive breed of their kind. There are still about 800 deer, reckoned to be very mischievous neighbours to the corn fields. On some of the inhabited islands rabbits have lately been introduced. *Kelp* is the staple commodity of the inhabitants of Harris. About 450 tons are made yearly, which bring more wealth into the country, and give more employment to the people, than all the other sources of emolument put together. Of the feathered tribe, Harris possesses great abundance, both tame and wild. The surrounding ocean is full of fish of all kinds, while the lakes are stored with trout, and the brooks with salmon. There is neither limestone, marble, nor freestone; the only stone in the island seeming to be whinstone and granite: and although part of the country is known by the name of *The Forest*, yet growing timber is no longer to be seen. The population, notwithstanding all these privations, has of late increased greatly; and in 1809 amounted to 3420. There is supposed to be about seven and a half parts, in 100, productive land. Till of late, this country had for ages been in the possession of the family of Macleod. It is now the property of a Low-country gentleman, Mr Hume of Harris.

LEWIS—is the principal island that belongs to the shire of Ross. It is 42 miles long from S. W. to N. E., and from 24 miles to four in breadth; and extends in all to 537 square miles of land, and about 20 square miles of fresh-water lakes. The general aspect is not remarkably mountainous; but nearly around it there is a bold and rocky shore, along which, with intervals of broken and waste ground, is the only land yet cultivated, and which amounts to but a very small proportion of the whole island. The interior of the country, for the most part, is a wet morassy swamp. The climate is humid, but does not appear to be unhealthy, as the people enjoy as good health, and live as long, as in any other part of Scotland. The winter is rainy, the spring cold and backward; but the summer is wonderfully warm, insomuch that the bear, which is often sown toward the end of June, is ready to be cut down in the month of September, when the rainy season again commences. Agriculture, of course, is pursued here under very unfavourable circumstances; oats, bear, a little flax and hemp, and of late potatoes, (to which the people at first had great aversion), are almost the only crops cultivated. The live stock, about 15 years ago, appeared to be about 10,520 cattle, besides 2300 calves; 2636 horses; 15,012 sheep, and some goats. The fisheries are very extensive, and most commodiously situated in the numerous and deeply penetrating bays. The fish are in great abundance; but the inhabitants, distracted by their attention to the precarious cultivation of the land, and to the yearly preparation of fuel from their mosses, have it hardly in their power to prosecute them to great extent. They do not seem, however, to be inactive, when they have time to attend to this branch of industry. Besides what is required for their own use, they are wont to export yearly about 5765 barrels of cured herrings; 116 tons of dried ling; 506 barrels of train oil, besides manufacturing about 220 tons of kelp. They export likewise about 2000 cattle yearly. On the other hand, they need every season to import some meal.

There are myriads of all kinds of water-fowl in the many fresh-water lakes; and as to game, there are grouse, plovers, snipes, and wild pigeons, in great plenty; but neither partridges, rooks, magpies, nor red-breasts, have as yet been seen in the island; nor the fox, the badger, the mole, the weazel, the frog; but there are otters and polecats to be found; and lately hares were brought to it, which are multiplying greatly. The whole belongs to SEAFORTH, one of the kindest landlords in the north of Scotland, and who neglects nothing that can tend to the encouragement and prosperity of his people. He resides occasionally in this quarter of his extensive domains, at Seaforth Lodge, an elegant little mansion on the east coast, near Stornaway, which is a town rising fast into importance, with a rapidly increasing population, that now amounts to 2305, having trebled its numbers in the course of the last fifteen years.

The inhabitants of Lewis, amounting to 10,522, are a quiet race; but, when trained, make excellent soldiers. They are nearly all of the Established Church. In addition to the four parochial schools, the Society for propagating Christian Knowledge has established a fifth in the district of Ness, the most northerly and the most populous in the island, and where there is also the greatest extent of conterminous arable land. The husbandry of this island is censured as being very defective; but when one reflects on the circumstances with regard to soil and climate, and keeps in view the remote situation of the country, there is more reason to be surprised that there is any cultivation at all, than that it should be incorrect. Even the salt-duty regulations interfere with the industry of these poor people, who are thus obstructed in the only productive occupation that the nature of their country admits of, that of the fishery.

Besides Lewis, the following isles belong to Ross-shire.

St Kilda, or *Hirta*.—"This remote island," in the language of Mr Macdonald, "lies 48 miles west by north of North Uist, and about 140 miles from the Mainland of Scotland. It is three miles long, and two miles and a half broad; and, together with its adjacent islets, comprehends nearly 3000 acres Scots, (or about six square miles). The soil is mossy, but abundantly fertile: barley, oats, and potatoes, thrive tolerably well, especially the first and last mentioned. It contains only four species of quadrupeds, horses, cows, sheep, and dogs. It belongs to Colonel Macleod. The number of people is 103." The inhabitants having little intercourse with strangers, retain still their primitive manners, and are an honest and industrious set of people, remarkable for their dexterity in climbing for the eggs, and the young, of the vast quantity of sea-fowl which haunt the high and precipitous rocks with which their island is every where surrounded. The gannet or solan goose is the principal of these birds, though it does not breed in St Kilda; and feathers are their chief export.

Rona—is situated in the northern ocean, about 25 miles nearly due north from the Butt of Lewis. It is about a mile long and half a mile broad, and has in it the remains of an ancient chapel dedicated to St Ronan. It is rented at 4*l*. by a tenant in Ness of Lewis, who every year sends a large open boat, and fetches its annual produce, being some *corn*, butter, cheese, a few sheep, and sometimes a cow, as also some fowls and feathers. It was formerly inhabited by five families, but it is now the solitary dwelling of one family, whose lonely situation, it is believed, is unexampled in Europe, or perhaps in the world. About six miles east from this is the barren rock of *Sulisker* or *Bara*. It is a great haunt of wild-fowl, which induces the adventurous people connected with Rona to go annually to it, and at the risk of their lives to climb up its rugged sides, and they generally succeed in bringing off a considerable booty in fowls and feathers.

Flannen Islands, or the Seven Hunters—are situated about 15 miles west from the Gallan-head, the most westerly point of Lewis. They are of considerable extent, but not inhabited, and are used only for feeding sheep, which thrive well, and commonly have two lambs in the season. They are visited only once a-year by the people of Lewis, to shear the sheep, to bring home what they have occasion for, and to kill sea-fowl, which abound greatly; and in particular to collect the feathers of the eider duck, so valuable an article in commerce; so that this annual excursion is attended not only with much amusement, but with considerable profit.

These are the principal islands of the Hebrides. To have entered into a description of the whole, would have swelled this part of the work beyond all reasonable bounds.

It may be proper however, to add, that the inhabitants of these islands, and of the adjoining districts on what may be called the more continental part of Scotland, are still distinguished by the use of the Erse language, and by an attachment to the dress, the music, and the customs of their Celtic ancestors; the memory of whose gallant achievements they continue to preserve, and to rival, in their more recent exertions. *

---

* One of the best means of introducing the English language into the Highland districts is, the establishment of Gaelic schools, publishing a Gaelic Dictionary, and other works in the Celtic tongue. The advantages of this system is very ably explained by the late Reverend Dr John Kelly, in an address prefixed to his Triglot Dictionary of the Gaelic language, as spoken in Man, Scotland, and Ireland; an edition of which, printed in 1805, was destroyed by fire; but fortunately some copies of the prospectus, and the entire manuscript, (which it is to be hoped will still be published), have been preserved. It appears from that address, that those excellent bishops of Man, Wilson and Hildesley, were convinced, that the publication of Gaelic books, was the most effectual means of removing ignorance, communicating truth, and introducing even a knowledge of the English; and Dr Kelly contends, that by adopting the same plan in Ireland, the happiest consequence would follow; for the Irish, by acquiring even a portion of English, would be enabled, by reading and conversation, to diminish, if not altogether to get the better of that deplorable ignorance and bigotry, under which the lower classes of the Irish have so long laboured.

The propriety of translating the Bible into the Gaelic language, for the benefit of the Scotch Highlanders, is so ably inculcated by the celebrated Dr Samuel Johnson, in the subjoined letter, that it was thought highly expedient to preserve it in this place.

" To Mr WILLIAM DRUMMOND.

" SIR,—I did not expect to hear that it could be, in an assembly convened " for the propagation of Christian Knowledge, a question, whether any nation

BRANCH III.

The Northern Isles.—Those islands, which compose the *Ninth District*, come now to be considered. They are divisible into two classes, viz. the Orkney Islands; next, those of Zetland.

" uninstructed in religion should receive instruction; or whether that instruction should be imparted to them by a translation of the Holy Books into their own language. If obedience to the will of God be necessary to happiness, and knowledge of his will be necessary to obedience, I know not how he that withholds *this* knowledge, or delays it, can be said to love his neighbour as himself. He that voluntarily continues in ignorance is guilty of all the crimes which ignorance produces; as to him that should extinguish the tapers of a Light-house, might justly be imputed the calamities of shipwrecks. Christianity is the highest perfection of humanity; but as no man is good but as he wishes the good of others, no man can be good in the highest degree, who wishes not to others the largest measures of the greatest good. To omit for a year, or for a day, the most efficacious method of advancing Christianity, in compliance with any purposes that terminate on this side of the grave, is a crime, of which I know not that the world has yet had an example, except in the practice of the planters of America, a race of mortals, whom, I suppose, no other man wishes to resemble.

" The Papists have, indeed, denied to the Laity the use of the Bible; but this prohibition, in few places now very rigorously enforced, is defended by arguments which have for their foundation the care of souls. To obscure, upon motives merely political, the light of revelation, is a practice reserved for the reformed: and surely the blackest midnight of Popery is meridian sun-shine to such a reformation. I am not very willing that any language should be totally extinguished. The similitude and derivation of languages afford the most indubitable proof of the traduction of nations, and the genealogy of mankind. They add often physical certainty to historical evidence; and often supply the only evidence of ancient migrations, and of the revolutions of ages which left no written monuments behind them.

" Every man's opinions, at least his desires, are a little influenced by his favourite studies. My zeal for languages may seem, perhaps, rather over-heated, even to those by whom I desire to be well esteemed. To those who have nothing in their thoughts but trade or policy, present power, or present money, I should not think it necessary to defend my opinions; but with men of letters, I would not unwillingly compound, by wishing the continuance of every language, however narrow in its extent, or however incommodious for common purposes, till it is reposited in some version of a known book, that that it may be always hereafter examined, and compared with other languages; and then permitting its disuse. For this purpose the translation of the Bible is most to be desired. It is not certain that the same method will not preserve the Highland language for the purposes of learning, and abolish it from daily use. When the Highlanders read the Bible, they will naturally wish to have its obscurities cleared, and to know the history collateral or appendant. Knowledge always desires increase; it is like fire, which must be first kindled by some external agent, but which afterwards propagates itself. When they once desire to learn, they will naturally have recourse to the nearest language by which that desire can be gratified; and one would tell another, that if he would attain knowledge he must learn English.

" This speculation may, perhaps, be thought more subtile, than the grossness of real life will admit. Let it however be remembered, that the efficacy of ignorance has been long tried, and has not produced the consequence expect-

1. THE ORKNEY ISLANDS.

These shall be taken in the order in which they lie nearest to the mainland of Scotland.

1. *Stroma*—is an island a mile long, and a mile and a half broad, in the middle of the Pentland Frith, between Caithness and Orkney, and belongs to the former. It is extremely fruitful in corn, but destitute of fuel. The inhabitants, amounting to 30 families, consisting of 170 souls, are remarkable for industry, sobriety, and simplicity of life. The sea, particularly in the winter months, is inconceivably tempestuous around the island, more especially when it beats against the high western shore. At this time the spray rises so thick and so high, as to run down in rills to the opposite side, where a reservoir is made to retain the water, which, with the rain that falls occasionally, serves to turn the corn-mill of the island.

2. *South Ronaldsa.*—This is the most southerly isle of any note in the Orkneys. It is situated about six miles north by east of Duncansbay-head, in Caithness. It is about eight miles long from south to north, and from two to four miles broad, extending in all to 24 square miles. It has in general a mountainous aspect, but contains a considerable portion of arable land, of which the cultivation is still in a very rude state. The population in 1795, was 1615; the number of horses 674; of cattle 455; of sheep 746; and of swine 240. These last roam at large, and do incredible damage to the corn. The crops are bear, generally good; oats, wretched; and potatoes, excellent. The natural grass (and there is hardly any other) is generally luxuriant. There is a great lobster fishery on the coast, and abundance of ling, turbot, haddocks, &c. all much neglected. About 125 tons of kelp are manufactured yearly.

3. *Flota.*—This is situated about a mile and a half to the westward of the preceding; is about three miles and a half long, and in some parts one and a quarter broad. It has a church, and it makes part of the parish of Walls and Flota. It seems to have a considerable degree of fertility.

4. *Hoy.*—This island is nearly as far to the southward as South Ronaldsa, and is situated about four miles to the westward of

---

"ed. Let knowledge, therefore, take its turn; and let the patrons of privation "stand awhile aside, and admit the operations of positive principles.

"You will be pleased, Sir, to assure the man who is employed in the new "translation, that he has my wishes for his success; and if here, or at *Oxford*, "I can be of any use, that I shall think it more than honour to promote his "undertaking.

"I am sorry that I delayed so long to write.

"I am, Sir, &c.

"Johnson's-court, Fleet-street, "SAM. JOHNSON."
August 13, 1766.

it, and about six miles north from the Dunnet-head in Caithness. It is about 15 miles long from S. E. to N. W. and six miles and a half at its greatest breadth in a cross direction, extending in all to 56 square miles. The peninsula of Walls on the S. E. contains some tolerably fertile land; but the greater part of the island is a mountainous and barren country, not naturally fertile, and but little cultivated. The only crops are black oats and bear, and of late potatoes. Neither does the fishery nor kelp-making add much to the emolument of the inhabitants, who amount to about 1000. Three fourths of these are in the territory of Walls.

5. *Graemsa.*—This Orkney island is about a mile and a half long, and in some parts about a mile broad. It is situated in the middle of the sound between the Mainland and the isle of Hoy, within a mile of Stromness. It has some pretty fertile land, but has neither church, school, nor fuel. The number of people is 160, and the rent 150*l.* It belongs to Honyman of Graemsa, Lord Armadale.

6. *Burra.*—This lies between South Ronaldsa, and the Mainland of Orkney, within a short distance of either. It is four miles long, and from two miles to less than one mile broad. In general it has fine natural pasture, and from cultivation bears excellent crops of potatoes, turnip, peas, onions, carrots, and cabbages, but is said to be not much adapted to the growth of white crops. It belongs wholly to Lord Dundas, and is inhabited by 318 people.

7. *Copinsha.*—a small island lying about two miles to the eastward of the Mainland of Orkney, only remarkable now for the ruins of considerable buildings on an adjacent holm, and for the number of sea-fowl that frequent its cliffs.

8. *Pomona*, or the Mainland of Orkney, is situated nearly in the heart of the whole cluster of islands. It is about 28 miles long from east to west, and 14 miles, at its greatest breadth, from south to north. In some places, however, it does not exceed two miles in breadth, (and in one place not more than half a mile), and it is so very much intersected by arms of the sea, as to have 140 miles of coast. The whole extent may be about 212 square miles. Although not a mountainous country, it is far from being level, as it abounds in hills, and has also a great proportion of heath and swampy land, besides several fresh-water lakes, some of them of considerable extent. The lands in cultivation will not exceed 14,000 English acres, which is an acre to each of the inhabitants. The only crops cultivated to any extent are bear, and black oats, and of late potatoes. There are indeed some trials made of wheat, which is found to succeed tolerably well, but hitherto very little has been sown. Turnip and artificial grasses have also been introduced, and thrive so well, that it is probable the cultivation of these will in a short time be more

extensive, as they are certainly much wanted for the winter support of the live stock, which, although a small breed, is pretty numerous. The horses are supposed to amount to nearly 4000, the cattle to 7200, and the sheep to about 10,000; the two last species of stock might well be doubled, both in number and size, by an adequate cultivation of those green crops, which are best adapted to the soil and climate. Swine abound to a nuisance. There are about 3200 of them that roam at large, and do incredible mischief to the crop. The whole island is divided into seven ministerial charges. There are two towns of considerable size, Kirkwall and Stromness, in the same latitude, about 15 miles distant from each other; and both have the advantage of excellent natural harbours. The agriculture of this large portion of the Orkneys is still in a very rude state. But the kelp manufactory is prosecuted with energy, and the fishery with success.

9. *Shapinsha.*—This island lies north from the Mainland of Orkney, about three miles from Kirkwall. It is five miles and a half long, and in some places three miles and a half broad, containing in all about ten square miles of surface. All around the shore, which from the many indentations of the sea is very extensive, the land is pretty level to a considerable distance inland, and bears rich crops of grass and corn. Towards the interior, the land rises high; and, never having been under culture, is in its present state only fit for the pasture of sheep. Of this useful animal there were formerly about 3000 kept on the island, and thence it is thought to have derived the name; but from extremely harsh treatment, they are now reduced to half that number. The cattle amount to 800; the horses to 250, and the swine to a number unknown. The agriculture of this neglected spot is very defective; yet so fertile is the soil, that scarcity is almost never known, corn being had in general on remarkably low terms. The number of people is 730. The making of kelp, and fishing, are their chief employments. The number of boats is 80; and the rent of the whole of this fine island is 600*l.*

10. *Weir* or *Wire*,—a small island lying off the S. E. coast of Rowsa, and north from the Mainland of Orkney. It contains several hundred acres of low land, of great natural fertility, although but poorly cultivated. The fishing and kelp-making are the great objects with the natives, who have eight boats, which of late have not been successful.

11. *Enhallow.*—This is another low fertile small island, situated between Rowsa and the Mainland, and like to the preceding is poorly cultivated. It has 25 inhabitants, who keep two boats for the fishing, their chief employment.

12. *Rowsa.*—This isle lies about one mile and a half off the

north coast, and near the west end of the Mainland of Orkney. It is nearly a square of about four miles on a side. It is a pleasant healthy island, of a hilly aspect, inhabited by 772 people, who cultivate their small strip of arable land along the shore with a very moderate degree of attention. Their great care is the extension of the fishing and kelp-manufacture; and these two employments seem in all cases to occasion bad farming. This island abounds in moor game.

13. *Englisha.*—This is a pleasant low-lying island, situated about a mile to the eastward of the isle of Rowsa. It is about three miles long, and from one to one mile and a half broad. It has a church dedicated to St Magnus, the tutelar saint of Orkney, with a stately pyramidal steeple. The soil is good, but the cultivation is bad; the genius of the people leading them to prefer kelp-making and fishing, to agriculture, although their success in the fisheries has not, of late, been very flattering. The number of people is 210, and they have 12 boats.

14. *Stronsa.*—This island is situated about five miles north from the east extremity of the Mainland of Orkney. It extends about seven miles from S. E. to N. W. and has some branches that stretch out six miles from S. W. to N. E. but is so indented on all sides by bays and harbours, as hardly in any part to be more than half a mile from the sea. The soil is reckoned to be of a poor quality; but the great dependence of the inhabitants of this island is upon the kelp manufacture, which produces 300 tons yearly, and is a source of considerable wealth. The crops cultivated are bear and oats in continued rotation, except so far as the cultivation of potatoes has been introduced; and artificial grasses are found to thrive. The population is stated at 887; the horses at 500; cattle at 900; sheep at 3000; swine at 300; and geese at 700; besides a multitude of lesser poultry. There are also 27 ox-carts, and 55 boats; the number of ploughs not mentioned. There are some chalybeate springs in this island, and an appearance of lead ore.

15. *Eda.*—This island is situated about six miles north from the middle of the Mainland of Orkney, but having the isle of Shapinsha between them. It is about eight miles long from south to north, and in some places nearly four miles broad. It consists chiefly of hills of a moderate height, well adapted for pasture, and having a considerable proportion of arable land, chiefly in small plots, delved with the spade, along its very extensive shores. It has several dependent holms, well adapted for pasturage. Kelp-making is the chief employment of the inhabitants, who amount to 601. The number of horses is 120; of cattle 300; of sheep 2000; of swine 100; and of geese 120. The ox-carts are five in number, and the boats 34; from which last-mentioned article, it may be inferred, that the fishery is

considerable. The people are kind, obliging and hospitable, not merely to each other, but to strangers, more especially on such occasions as a wedding or a christening.

16. *Westra*.—This island lies about two miles west from Eda, and is about eleven miles long from S. E. to N. W. and in some places about seven miles broad in a cross direction. The soil, where capable of cultivation, is of various kinds, loam, clay, and sand, but the cultivation is very imperfect; the crops are bear, grey oats, and, lately, potatoes. Kelp-making is the great business of the people; 280 tons are made yearly; rent 485*l.* There are 144 ploughs used, and 45 ox-carts. It makes a parish conjoined with the small island Papa Westra. The stock in both is 825 horses; 1074 cattle; 1848 sheep, and 417 swine; and there are 82 boats. There is a great scarcity of fuel. On the whole, it does not seem to be a very desirable country, for the people in general live under many privations. They amount in both islands to 1629.

17. *Papa Westra*, or Little Westra,—lies about a mile off the north coast of the greater Westra. It is about five miles long from north to south, and about a mile broad. It is reckoned a very fertile island, containing the finest pasture and the best corn land in all Orkney. There are 24 ploughs on it, and five ox-carts. The land rent is 118*l.*, and 70 tons of kelp are made yearly.

18. *Sanda*.—This flat sandy island is about 12 miles long from S. W. to N. E. and in some parts two miles broad in a cross direction, extending in all to 19 square miles by measurement, or 12,160 English acres, of which 1725, laboured by 115 ploughs, are in constant tillage, and have been in bear and oats alternately time out of mind, and still produce good crops. There is also a considerable quantity of potatoes planted of late, which, so far, make an improvement in the rotation. In the kail-yards there are various kinds of vegetables produced; so that the inhabitants, 1772 in number, have not only plenty of corn and vegetables to live on, but in general export a considerable quantity of grain yearly, stated at from 400 to 800 bolls of bear, and from 300 to 500 bolls of meal. There is commonly made from 500 to 600 tons of kelp annually; and it is manufactured in such a careful manner, as to bring the highest prices in the market. The land rent is stated to be 725*l.*, and the proprietor's profit on the kelp 1275*l.*, making, on a moderate conversion, 2000*l.* yearly. The live stock of Sanda consists of 856 horses; 1314 cattle; 4211 sheep; and 135 swine, all of the usual diminutive but active breed. The whole is divided into three parishes under the charge of two clergymen. This island is remarkable for shipwrecks, owing to its low situation, which prevents it from being seen at even a short distance. In the course of 50 years, there have been ships wrecked, with cargoes, to the value of upwards of half a million sterling. The people, however, are re-

markable for their kindness and attention to the unfortunate sufferers. There was some years ago erected a light-house on the island of N. Ronaldsa, in the vicinity of Sanda, which, it is to be hoped, may be the means of preventing these calamities from so frequently occurring.

19. *North Ronaldsa.*—This is the most northerly of the Orkney islands. It is situated about two miles to the northward of the east point of the isle of Sanda, and about 30 miles N. E. from Kirkwall. It is about four miles and a half long, from south to north, and nearly one mile and a half broad, and comprehends a surface of about six square miles. Of this about 432 English acres are arable and in constant tillage, cropped two years with bear, and one year with oats alternately. The rest of the island, in general a low, flat country, is in pasture, and has an uncommon degree of fertility. Besides maintaining its own population, amounting to 420, there is generally an exportation of grain. Kelp is made here also in a very correct manner, so as to fetch at market, like to the kelp of Sanda, the best price of any in Scotland. The quantity made annually is about 100 tons. The rent including profit from kelp, was about 500*l.* when kelp was selling at 8*l.* a ton; but when it rose to 16*l.* and 20*l.*, it would be proportionally augmented, as the expense of manufacturing it is generally the same. The live stock of this small island is also considerable, namely, 249 horses; 256 cattle; and 1900 sheep.

20. *Swina*, or Swanna,—a barren and shelterless island, lying in the middle of the Pentland Firth, off the S. W. coast of S. Ronaldsa. It is inhabited by 21 people, whose only inducement for remaining in such a sterile and exposed situation is the high fare they obtain for pilotage. Yet this terrific rock, that has such a dreadful appearance in a storm, is attended with this singular and fortunate circumstance, that a strong reverberating current turns aside vessels that seem to be rushing upon it, and conducts them past in safety, at the very instant that nothing but destruction might be expected.

21. *The Pentland Skerries,*—that were wont to be the dread of mariners, are two uninhabited small islands, in the east entrance of the Pentland Firth, between Caithness and Orkney. A light-house, erected upon them some years ago, has converted them into a salutary beacon, instead of being, as formerly, destructive.

These are the most important of the Orkney islands.

2. *The Islands of Zetland*

are situated much farther to the north, and are also more to the east than those of Orkney.

The following are all that require to be particularly mentioned.

1. *The Fair Isle.*—This is situated in lat. 59° 29′ N. and long. 1° 30′ W. about 29 miles east by north of the N. E. corner of

North Ronaldsa, the most northerly point in the Orkneys; and it is the same distance south by west from Sunbrugh-head on the southerly point of the mainland of Zetland. Although it is thus not nearer to the one group than to the other, it is accounted to belong to Zetland, and forms part of the parish of Dunrossness in that territory. It is nearly four miles long from south to north, and in some places two miles broad, amounting in all to about six square miles, of which only 75 acres are arable land, or required to be cultivated for the sustenance of the inhabitants. This is prepared by the spade, and it produces rich crops of bear and oats, and some flax, with an alternate year of fallow in rotation. The rest of the island is chiefly verdant knolls and hillocks except upon the shore, on nearly all sides, where it rises up into abrupt precipitous rocks from 300 to 500 feet high, excluding all access except on the S. W., where descending a little it admits of a passage, together with a safe harbour for small vessels. There are 400 sheep on this little island, remarkable for good mutton and fine wool; nearly 200 cattle, besides some goats and even horses, and not a few poultry.

The number of people is 220, and they reside in four little towns near the north end of the island, which have the fine Otaheitean-like names of Liah, Shewah, Bustah, and Gelah. The manners of these islanders are simple. The men are sober and industrious, and particularly skilful in the management of their boats. The women are mild and modest, and display much ingenuity in manufacturing flax and wool into various articles of dress for both home consumption and exportation. The rent of this island is 80*l*., paid in such articles as can be best spared, the proprietor furnishing the inhabitants, in the way of barter, with such articles as it may stand in need of. The distance from their parish-church, by 30 miles of sea, occasions them to have but very rarely a visit either to or from their clergyman; but the Society for propagating Christian Knowledge, has lately established a school here, which is of much benefit to these plain, honest people, most of whom can now both read and write. From the natural fertility of the soil of this island, equally adapted to the growing of corn and the rearing of cattle; from the immense shoals of fish, of the best quality, with which the ocean teems around; and from the industrious spirit of its hardy natives, it has been thought that it would make an excellent fishing station, and as such is worthy of the attention of the Scottish, or any other Society, for the prosecution of British fisheries.

2. *Fula*, *Fowla*, or the *Foul Isle*,—supposed by some to be the Ultima Thule of the antients, is an island accounted also to belong to Zetland, although it lies 28 miles west from the nearest point of the Mainland, opposite nearly to the middle of the whole.

off the west coast of the Mainland, and is inhabited by 14 families. It is called the Meikle Rooe, to distinguish it from a smaller isle of the name of Rooe, in the Sound of Yell, on which are two families. But neither the one nor the other would be inhabited, were it not for the fisheries which abound on their coasts; for the little corn raised on them is generally blasted by the sea-spray.

11. *Yell.*—Next to the Mainland, Yell is by far the most extensive island in Zetland. It is also the most northerly, except Unst, part of which is still farther north. From south to north, it is 20 miles long, and from 6 to 15 miles broad, containing an area of about 150 square miles of land, exclusive of several bays and friths, that run up into it on all sides. It is separated from the northern limb of the Mainland, by what is called the Sound of Yell, a branch of the sea about six miles over, interspersed with many small islands. This appears to be the most dismal, the least fertile, and thinnest peopled of all the Zetland islands. The quantity of arable land will not exceed 990 acres. The rent appears to be not above 750*l*., including the profits of fish, &c. in which the whole is paid. The population amounts to 1970. The whole grain raised does not serve them above eight months in the year; but they have always a great supply of fish, and from their cattle and sheep they draw also part of their maintenance. They are said to be a sober and unassuming people, at the same time sensible and acute; and can endure much toil, hunger, and cold, qualifications they are often called upon to exert. They make excellent seamen,—a profession to which they have a great inclination, in common with all the Zetlanders.

12. *Fetlar.*—This island lies about two miles and a half east from the southern parts of Yell. It is about five miles long, and in some places three and a half miles broad, but much indented by the sea. The soil is a tolerably black loam, mixed with sand, which produces bear and oats in a considerable degree of perfection; and also good garden vegetables, as turnip, cabbage, sallads, &c. There are about 400 acres in cultivation. The number of people is 796.

13. *Unst.*—This is the most northerly, and also the most fertile of the Zetland islands. From south to north it is about 10 miles long, and in some places 7 miles broad; but as it is considerably indented by the sea, the area will amount to about only 40 square miles. The general aspect is diversified into hill and dale, with several small lakes; and the arable land is disposed in strips by the shore, more especially at the south end, where it is pretty broad. Altogether it amounts to about 1875 acres, under crops of bear, black oats, and potatoes. The gardens are well stored with culinary vegetables and the smaller fruits, with a display of most flowers that Scotland can produce. The artichoke also is in great perfection in this island. The live stock consists of 2000 cattle, some of them 30 stone weight when fed;

1000 little horses, extremely hardy creatures, but none exceeding ten hands and a half in height, owing probably to the hard treatment they meet with, never being indulged with a stable, even in the coldest weather. The sheep amount to 660, of a pretty large size compared with the rest of the Zetland sheep, and they have remarkably fine fleeces: There are also many swine, of a considerable size. Rabbits abound on some of the dependent islets. Rats, mice, frogs, toads, and adders, are quite unknown.

The domestic poultry, including turkeys, are very numerous. Of game, there is neither grouse nor partridge, but the corn rail is frequently heard; and there are multitudes of the aquatic birds, such as snipe, plover, curlew, duck, swan, goose, heron; also wild pigeons. The birds of prey are eagles, (extremely destructive to the lambs), hawks, ravens, crows. The lakes afford trout and flounder; the surrounding ocean a vast variety of fish, and which are well attended to by the inhabitants. The ling, cod, and tusk fishery amount to 80 tons dried annually; and they make about 10 tons of kelp. The exports, besides the fish and the kelp, are butter, beef, tallow, and a considerable quantity of soft and warm woollen stockings: The imports chiefly tea, sugar, and wines. Freestone is got in some parts, and limestone in general along the west side of the island; there are also specimens of grey slate, and indications of coal. Among the precious stones may be stated some finely variegated jasper, rock crystal, and also very valuable garnets. The population is 1898. The rent is 790*l.*, divided among 37 heritors, of whom 26 reside; which may account for the very humane, open, frank, and affable character of the people, who are also a bold and a hardy race.

The general mode of living in this island, with the conveniencies and even the luxuries of life which the people enjoy, and the taste they display for finery and dress, together with their turn for amusement, in which music and dancing bear a conspicuous part, is all in a style of ease and elegance, that one would not expect to find in the most remote of the British islands.

* * *

APPENDIX, No. V.

ADDITIONAL PARTICULARS REGARDING THE CLIMATE OF SCOTLAND,

By the Rev. Dr GRAHAM *of Aberfoyle.*

I. DETAILS OF THE CLIMATE IN THE SEVERAL COUNTIES OF SCOTLAND.

IN giving this detail, it may contribute to perspicuity, to consider Scotland as divided, from south to north, into *three* great zones or belts, distinguished, as they are, from one another, in point of climate as well as soil. The *first* of these comprehends all the western coast washed by the Atlantic, with the exception of particular districts, (as some parts of Ayrshire), rather thin of soil, moist, and swept by southerly winds. The *second* constitutes the midland district, considerably elevated; the soil, in the more cultivated parts of the district, dry, rocky, and sometimes *tilly*, (consisting of coarse ferruginous clay), with the quantity of rain diminished. The *third* comprehends the whole eastern coast; the soil, in a considerable degree alluvial, * and the climate dry and sharp.

In describing more particularly the climate of these different zones, the most natural method seems to be, to begin by the south, and to proceed northwards. And here it may be proper to observe, that the author is deeply conscious, that neither he, nor perhaps any single individual, is adequate to the task of accurately describing such a variety of phenomena. This would require a knowledge, which can be acquired only by a residence, and the observations of many years, in every county, and even in every parish. Happily, however, a resource offers itself on this occasion, adequate to the difficulty to be encountered. In the Statistical Account of Scotland, a work of peculiar merit, which hitherto has not been rivalled in any other country, we have a detail of every circumstance which regards the climate, given by persons well qualified by their education and talents, and especially by an actual residence, generally of many years, to delineate with precision every feature which characterizes the district which they describe. From this copious and authentic source, diligently explored, the following information is, almost altogether, derived.

1. *The West Coast of Scotland, from the South.*

Galloway, including the counties of Kirkcudbright and Wigton, enjoys an air which is pure, and very salubrious. † This district, at least the lower parts of it, is not so moist and rainy as the more northerly districts of the western coast; probably because it is sheltered in a good measure by Ireland, which breaks the violence of the blast, and exhausts a part of the vapours of the Atlantic. In the interior parts of Kirkcudbright, the frosts are sometimes intense; but snow does not lie long. ‡ In Wigtonshire, the air, though moist, § is mild and salubrious; near the coast, snow seldom lies for a few days, || and the winters are very mild. ¶

It is only an inconsiderable portion of Ayrshire that receive

---

* See Stirlingshire Report, p. 54, 55, 56.

† Stat. Acc. ix. 312.

‡ Stat. Acc. ii. 126.

§ Ib. xiv. 471.

|| Ib. iii. 512.

¶ Ib. i. 359.

any shelter from Ireland. The mountains of Arran attract the clouds, and they fall down in frequent and heavy showers on the adjoining coast of Ayrshire. " The air is moist and damp, but " is far from being unhealthy.[*] It is milder and more tempe- " rate than in the east of Scotland.[†] The westerly winds blow " severely on the coast during the winter.[‡] Towards the west- " ern extremity of the county, the air is pure; snows melt as " they fall on the coast; and there are scarcely any fogs."[§]

Renfrewshire, from its vicinity to the Firth of Clyde, and to the lofty mountains of Argyleshire on the west, is visited with frequent and heavy rains; but having in its more elevated divisions rather a porous soil, the moisture is soon absorbed, and indeed, in such a soil, a considerable degree of moisture is favourable to vegetation.[‖]

Dunbartonshire, from similar causes, is watered with frequent showers, and may be said to have a weeping climate. " The " climate, however, is temperate, being screened by the moun- " tains from the northerly and easterly winds; the winter is not " intense; but there are frequent and heavy rains from the south " and south-east, accompanied by high winds."[¶]

The climate of Argyleshire, with its islands, is perhaps the most rainy in Scotland. This district is exposed, without any screen, to the entire influence of the Atlantic. Its lofty mountains attract the vapours that arise from the ocean, and the clouds burst in torrents upon the valleys. In the district of Cowal, and probably over the whole county, " the face of the heavens is " generally louring and cloudy: a serene sky is seldom to be " seen. The winds, prevented from a free circulation, rush " through the glens with irresistible violence; and, at the bot- " tom of high hills, and in narrow valleys, the transitions from " heat to cold are sudden and excessive."[**] The winters are, for the most part, mild and temperate; but the summers are frequently rainy and cold. Frosts are not intense, nor do snows lie long.[††]

Inverness-shire, may perhaps be considered as in some parts sheltered by the lofty mountains of Skye, and by the Western Isles, which furnish a barrier against the ocean. In its eastern districts, " the air is dry and healthy."[‖‖] On the west coast, as might be expected, " the air is moist, and generally very " cold; but so purified by storms, and kept in motion by rapid " currents, that it is, upon the whole, clear and healthy."[§§]

In the island of Skye, " from the height of the hills, and the " proximity of the sea, the air seldom continues long of the same

---

[*] Stat. Acc. ii. 85.

[†] Ib. ii. 114.

[‡] Ib. 265.

[§] Ib. 360.

[‖] Ib. i. 319, & ix. 61. 95.

[¶] Ib. iii. 430.

[**] Ib. iii. 163.

[††] Ib. i. 484; xiv. 141.

[‖‖] Ib. ix. 604; iii. 22. & 480.

[§§] Ib. iii. 146. & 370.

" temperature; sometimes it is dry, oftener moist, and, in the " latter end of winter and beginning of spring, cold and piercing."* The climate of the Western Isles, is so stormy on the side that is exposed to the Atlantic, that the inhabitants chiefly reside on the eastern side, which is sheltered by the mountains.

In the western part of Sutherlandshire, the climate is rainy, but not unhealthy.† The rain continues not only for hours, but often for days, nay for weeks, if the wind blows from the west; if it veers to the south, its continuance will not be long.‡

In the Orkney islands, the south-west wind blows with the greatest frequency and violence, and brings with it the heaviest rains. From the south-east, the winds are frequent, and sometimes stormy: these winds bring with them, in spring, summer, and harvest, when they most prevail, damp, moist, and foggy weather. The north, the north-east, and north-west winds, bring dry and wholesome weather. Seldom do calms, for any length of time, prevail. The greatest quantity of rain falls upon the west coast of these islands, owing to the height of the mountains. It is calculated that 26 inches of rain, on an average, fall annually; but the amount is probably more. Storms of snow are not frequent, or heavy; and though they come with considerable violence from the north-west and south-east, snow does not lie long. Part of the month of June is here almost as cold as any of the winter months. For about two weeks, or more, about the middle of that month, a strong and piercing wind blows from the north, sometimes accompanied with snow and hail showers. As soon as that period is past, warm showers succeed, which revive the herbage. The Orkneys, on the whole, enjoy a mild and moderate heat in summer. The range of the thermometer is from 25° to 75° of Fahrenheit: the medium heat is 45°. The range of the barometer is 3 inches.§

The climate of the Zetland Isles, may be presumed to resemble, in most respects, that of the Orkneys. Though the sky is inclement, and the air moist, the country is far from being unhealthy.||

Upon the whole, it appears from this sketch of the climate of the western coast of Scotland, and its isles, that, though moist, it is mild and temperate. The frosts are not intense, and the snows do not lie long upon the ground. The west and south winds prevail, accompanied by frequent and heavy rains; but such a climate seems admirably suited, by Providence, to maintain a constant verdure in a soil, which is, for the most part, thin and porous:—and thus, the natural constitution of this zone

---

* Stat. Acc. xvi. 140. † Ib. xi. 570. ‡ Ib. xvi. 188.

§ See Dr Barry's History of the Orkney Islands, from p. 1.

|| Stat. Acc. i. 386. & iii. 424.

seems to point out the pasturage of cattle and of sheep as the way in which it should be principally occupied.

2. *The Middle Zone, including the Midland Counties.*

This region of Scotland may be considered as comprehending the counties of Dumfries, Selkirk, Peebles, Lanark, Linlithgow, together with the eastern part of Stirlingshire, Clackmannanshire, Perthshire, and a part of Inverness-shire.

Having entered so largely into the detail of those circumstances which distinguish the climate of the western coast, it may suffice to observe, in general, with regard to this middle region, that the rains are less frequent; that the violence of the winds, proceeding from the Atlantic, is abated by the interposition of the mountains, which give shelter from the west and south-west; and that, from these causes combined, the weather is, upon the whole, of a more *equable* tenor. At the same time, and upon these accounts, joined to the greater general elevation of this region above the level of the sea, the frosts are more intense and lasting; the snows lie longer upon the ground, and the climate is less mild than on the western coast.

In Dumfries-shire, the air is dry; the winter is stormy and cold; the winds high, and the rains, in many seasons, heavy, but seldom any continuation of snow.* This county, as well as the stewartry of Kirkcudbright, and shire of Wigton, have a southern aspect.

In Peebles-shire, the air is in general dry and healthy †; but in the higher parts of the county, it is for the most part moist ‡.

Lanarkshire is situated so singularly, in general reference to this region, as to require more particular notice; and, fortunately, this notice is furnished, in a very superior style, by Mr Naismith, the intelligent Reporter of Clydesdale. It is hoped that the reader will be gratified with a somewhat enlarged detail of the climate of this county.

Lanarkshire, with a great portion of Renfrewshire, affords the most remarkable instance in Scotland, of an extended slope declining towards the *west*. On a smaller scale, the county of Dumfries has a southern aspect; and the stewartry of Kirkcudbright and shire of Wigton, have a similar aspect to the south. Ayrshire, as well as Lanarkshire, declines to the west. The greater part of the rest of Scotland forms, it is well known, an inclined plane towards the *east*. In this district, however, we have an example of a territory sloping towards the sea, from an elevation of 2368 feet above its level, and discharging its waters, by a great river, into the Atlantic. This is a circumstance which must, no doubt, be considered, as influencing the climate of this district; and it is presumed that this influence may be traced in Mr Naismith's account.

---

* Stat. Acc. ix. 420; ii. 286. † ii. 307. ‡ iii. 295.

The influence of the Atlantic predominates throughout the whole bounds of Lanarkshire,—the winds blowing about two-thirds of the year from south-west and west. The easterly wind, which conveys *haars* from the German Sea, is interrupted by the hills on the east side of the county; so that the temperature is moderate. Intense frost seldom continues long; and long-lying snows are rare. The clouds, in passing over the flat, and lower parts of the county, often leave them dry; while they break in showers upon the higher ground, in the eastern and western districts.

The under stratum of most parts of this county being compact, and impermeable to water, the evaporation from the moist soil is great. When a course of dry weather, to effect this evaporation, does not take place in spring, the seed time is necessarily late, which is one great cause of the lateness of the harvest in many parts of Lanarkshire. This lateness is most remarkable on the higher grounds of the county, on account of the more general moistness of the air, and the greater frequency of rain.

The eastern district of Stirlingshire, together with Linlithgowshire, may be considered as partaking, with respect to climate, of the character of the eastern coast; yet, on account of the narrowness of this part of the island, the influence of the Atlantic still predominates, producing a prevalence of south winds, with the most violent storms, and heaviest rains that affect this quarter. Even in the Stirlingshire carses, as well as in many other parts of the central division of Scotland, and in the whole of the western districts, the hedge-rows grow with a marked inclination towards the north-east.[*] The air of the district is, in general, pure and salubrious,[†] except where those thick vapours which have been already described as arising from the extensive mosses of the county, unfortunately prevail.

The western district of Stirlingshire, partakes of the character of Dumbartonshire, and the western district of Perthshire, with regard to climate. The vicinity of the sea, and the height of the mountains, occasion frequent and heavy showers.

The climate of the mountainous districts of Perthshire is very variable. The lofty mountains of Menteith and Breadalbane attract the clouds, which sometimes burst in torrents upon the valleys: at the same time it would appear, that more rain falls upon the mountains than upon the valleys. At other times the clouds are frequently seen to take their course along the hills, bursting upon them in heavy showers, whilst the interjacent valleys enjoy serene weather. In the more central parts of Perthshire, snow lies long, and the frosts are often severe. Along the sides of rivers, blasting fogs, and hoar frosts, are frequent and injurious.[*] In the more easterly districts of the county, the climate is mild, and the air salubrious.[†] The east and north-east winds, in winter, bring snow, or rain, or mist, from the German Ocean, and occasion a depression of the animal spirits.[‡] In the lower grounds, these moist vapours, and the exhalations from deep and narrow valleys, sometimes occasion agues; but these are now less frequent, owing probably to the improved mode of cultivation which has been introduced.[§]

---

[*] Stirlingshire Report, p. 18.

[†] Stat. Acc. i. 228.

On reaching the tract of the Caledonian Canal, in the *Glen-more* or the great glen or dell of Scotland, this midland zone may be considered as terminated: that part of the island which lies to the north of this line becomes so narrow, that its climate may be arranged either under that of the western, or of the eastern zone, according to the situation of the place.

3. *The Climate of the Eastern Coast of Scotland.*

In general, the climate of the east coast is dry, pure and salubrious.[‖] Agues are disappearing in Berwickshire, in consequence of draining, and improving the surface. Easterly winds prevail, especially in April and May.[¶] In the Lothians and Fife, the climate is mild and temperate, considering the latitude in which these districts are situated. In Forfarshire, the heaviest rains come, in autumn and winter, from the south-east, attended by violent winds;[**] but the air, in general, is dry and salubrious. In Kincardineshire, although the climate is generally dry, yet the corn is sometimes deeply injured by mildews, or sea fogs, along the coast, while the interior parts remain uninjured. In Aberdeenshire, the equinoctial storms in harvest, are occasionally injurious to the various crops of corn; though there are less severe frosts, in that county, in winter, than even in Middlesex. In the maritime parts of Banffshire, and particularly on the sea-coast of Moray, the climate is remarkably mild. On the eastern coast of Inverness, and Ross shires, it is pure, and favourable to the raising of grain: And even at the extremity of the island, the climate is temperate, in the maritime parts, and great valley of Caithness, though the thermometer seldom rises high in that northern latitude.

The circumstance which more especially characterizes the climate of the eastern coast, is the frequency of fogs arising from the German Sea; and these, as has been already suggested, are occasioned by the greater degree of heat which takes place in that narrow ocean, compared with the Atlantic. A copious evaporation is the consequence, which, under the appellation of *eastern haars*, overspreads the adjacent coasts, proceeding westward, till they are interrupted by the high mountains which occupy the middle region of Scotland.[*] The easterly winds which convey these exhalations, and which prevail chiefly in spring, and in the beginning of summer, are, at the same time, cold and piercing. They had passed over a wide continent, which had been covered, during many previous months, with snow, and have not had time to acquire warmth, from the narrow sea which they had passed over in their course [†].

---

[*] Stat. Acc. ii. 464. [†] Ib. xi. 436. [‡] Ib. ix. 223. [§] Ib. ix. 468.
[‖] Stat. Acc. iii. 117, 153. [¶] Ib. 194. [**] Ib. *passim.*

These exhalations, accompanied by winds from the east or north-east, prevail, more or less, along the whole eastern coast. The climate of the eastern coast of Scotland, however, more especially towards the south, is salubrious; and less rain falls, unquestionably, than on the west coast, or even in the midland region. Agues, which formerly prevailed on the eastern coast, from the combined influence of exhalations arising from the sea, and from ill-cultivated and ill-drained grounds, are now less frequent. This has been occasioned, no doubt, by the gradual correction of the evils that affect the soil, and by the introduction of an improved style of cultivation. It seems, indeed, to be certain, that it is in the power of man to ameliorate the climate of any country, by an improved cultivation, and by giving proper shelter.

II.—*A* TABLE *of the* ELEVATION *of various* PLACES *in* SCOTLAND *above the* LEVEL *of the* SEA, *arranged according to the Alphabetical Order of the Counties.*

		Feet.
Aberdeenshire	Ben Macdouie[‡]	4300
	Braeriach	4220
	Cairntoul	4220
	Ben-a-bourd	3940
	Ben Avon	3920
	Lochnagar	3800
	Mont-Keen	3180
	Morven	2880
	Scronlac	2700
	Lecht	2700
	Cairneach	2700
	Montbattock	2600
	Gernies, or Firmonth	2500
	Buck of Cabrach	2377
	Noath	1900
	Ben New	1800
	Benochie	1615
	Callievar	1480
Angus-shire	Cathlaw	2264
	Sidlaw	1406
	Craig-owl	1100
	Belmont	759
Argyleshire	Cruachan	3390
	Cruach Lussa	3000
	Beinmore in Mull	2980
	Scurdhonuil	2730
	Paps of Jura	2476
	The Cobler	2389
	Slia' gaoil	2228
In Arran	Goatfield	2840
Ayrshire	Cairntable	1650
	Blackside-end	1560
	Knocknounan	1540
	Ailsa rock	940
Banffshire	Cairngorum	4060
	Belrinnes	2747
	Corryhabbie	2558
	Knock	2500
	Beneagen	1582
Berwickshire	Soutrahill	1000
	Dunse law	630
Caithness	Pap of Caithness	1929
	Scarryhills	1876
	Ord of Caithness	1250

---

[*] Stirlingshire Report, p. 22.

[†] Stat. Acc. xix. 461.

[‡] Properly, perhaps, Benmucdui, or the Mountain of the Black Boar.

County	Mountain	Feet.
Clackmannanshire	Bencloch	2450
Dumfries-shire	Hartfell	2582
	Black Larg	2299
	Queensberry-hill	2140
	Cairn Kinnow	2080
	Erickstone-brae	1118
Edinburghshire	Muir-foot hills	1850
	Loganhouse hill	1700
	Kirkyetton	1555
	Arthur's Seat	814
	Salisbury Craig	550
	Calton-hill	350
Fifeshire	West Lomond	1280
	East Lomond	1260
	Largo Law	1010
	Kelly Law	810
Haddingtonshire	N. Berwick Law	940
Inverness-shire	Benevis	4370
	Scarsough	3412
	Mealfourvonie	3060
Kincardineshire	Clocknaban	2370
	Kerlock	1890
Kirkcudbrightshire	Scriffield	2044
	Cairnsmuir	1728
	Bencairn	1200
	Cairnharra	1100
Lanarkshire	Lowthers	3150
	Tinto	2368
	Culter-Fell	1700
	Leadhills Village	1564
	Walston Mount	1556
	Town of Lanark	650
Linlithgowshire	Cairn Naple	1498
Orkneys	Highest hills	1200
Peebles-shire	Hartfield	2800
	Gumscleugh	2200
	Dundroigh	2100
	Meagle	1480
Perthshire	Benlawers	3787
	Benmore	3653
	Benglo	3459
	Shichaillon	3281
	Benderig	3550
	Beinardlarich	3500
	Beinvurlich	3300
	Benledi	3009
Renfrewshire	Misty Law	1240
Ross-shire	Benwyves	3720
Roxburghshire	Millerwood Fell	2000
	Tudhope Fell	1830
	Ruberlaw	1419
	Eildenhills	1330
Selkirkshire	Blackhouse Heights	2370
	Windlestraw Law	2295
	Etterick-Pen	2200
	Wardlaw	1009
Stirlingshire	Benlomond	3262
	Alva-Hill	1600
	Campsie Fells	1500
Wigtonshire	Larg	1758
	Knock of Luce	1014
	Fell of Mochrum	1020
	Burhullion	814
Zetland	Rona	3944

The above Table exhibits the elevations of the most remarkable mountains and eminences of Scotland. It has been extracted partly from the Statistical Account, partly from Dr Barry's excellent History of the Orkneys, partly from the Philosophical Transactions of the Royal Society for 1777, partly from Dr Keith's agricultural Survey of Aberdeenshire, and especially from the ' Table of remarkable Mountains in Scotland, ' given by Mr James Duncan of Glasgow, in his very useful and accurate publication, entitled ' The Scots Itinerary. ' To the list might have been added eight or ten mountains in Argyleshire, and as many more in Perthshire, whose height is from 2000 to 3000 feet. None of the Dunbartonshire mountains are enumerated, as the author meets with no certain information concerning them; though there is no doubt that the height of many of them, especially in the Arroquhar district, exceeds 3000 feet.

To complete the discussion of a subject which appears indispensable in forming a just idea of the climate of Scotland, a few miscellaneous elevations will now be stated chiefly from the Statistical Account, and other authentic sources.

Carses of Stirling, and probably of Gowrie, &c. from	12 to 20
Highest elevation of the Great Canal, near Kilsyth,	156
Lands in tillage on the verge of Slamannan Moss,	620
Ditto in the upper ward of Lanarkshire,	760
Ditto in the parish of Hume and Stitchel, Roxburghshire,	600
Ditto in the parish of Muckart, Perthshire,	600
Ditto at Doubruch, in Braemar, Aberdeenshire,	1294
Ditto about Leadhills, in Larnarkshire,	1564
Lochlomond,	22
Lochearn, in Perthshire,	300
Loch Oiche, the highest elevation of the Caledonian Canal above the Beauly Firth,	94

In considering the above statement of elevations, it must occur, that Scotland is divided into three portions, of no very unequal extent, by valleys, or isthmuses, not much elevated above the level of the sea.

The first valley or isthmus is formed by the approach of the Firths of Forth and Clyde towards each other, and separates the southern from the northern part of Scotland.

The second is formed by the approach of the Linnhe Loch on the west, to the Murray Firth on the east, and separates the middle region from the most northern.

It must occur also, from a slight inspection of the map, that these valleys, as well as all the great ranges of mountains in Scotland, have their direction from the south-west to the north-east. It is in this line that the great range of the Grampians lies; and also most of the inferior ranges, such as that which extends from Dunbarton on the west, by Stirling and the Ochils, to the eastern extremity of Fifeshire.

This circumstance of the direction of our mountains and valleys, there is no doubt, affects the climate very considerably, by giving additional strength to the influences of the Atlantic. The south-west winds, sweeping over that immense reservoir, and directed in their course by the natural trend of the country, bring warmth, and moisture, and health to Scotland.

Another remark that will naturally suggest itself from the consideration of the above Table is, that, *in general*, the loftiest mountains of Scotland, are situated towards the western coast; and that, except in one instance, afterwards to be noticed, the more elevated grounds which send forth our great rivers, occur in that quarter. We find, indeed, many of our highest mountains, such as Benmucduie, Cairntoul, Cairngorum, Benlawers, &c. nearly in the middle between the two seas, and in the line of those alpine ranges that run through Scotland in the direction of south-west and north-east. But, upon the whole, it is towards the west coast, that we meet with that thick studded barrier of mountains which extends from Benwyves, in Ross-shire, by Benevis, Cruachan, and the mountains of Mull and Jura, to Benlomond.

The almost universal course of our great rivers, originating in the elevated grounds on the west, and discharging themselves into the German Sea, seems to be decisive of this conformation of the territory. All the rivers that run into the Firths of Cromarty and Murray, together with the Spey, the Tay, and the Forth, have their sources almost on the confines of the Atlantic.

It may be admitted, then, that Scotland, in regard to the respective elevations of its territory, forms an inclined plane, verging towards *the East*. In that direction all our great rivers, with the exception of the Clyde, discharge themselves; and on that side, the richest soil is uniformly to be found. The lofty barrier of mountains placed on the west, may therefore be considered as a bountiful provision of Providence for sheltering from the blast that part of the island which is most fertile, and best adapted to agriculture; whilst the frequent and heavy rains which visit the western coasts are well suited to preserve constant verdure in a district, of which the soil is thin, and where so many circumstances concur to recommend the pasturage of cattle and of sheep.

III. RESULTS OF METEOROLOGICAL TABLES RELATING TO SCOTLAND.

1. *Of the Barometer.*

BY Dr Macfarlane's tables, the greatest range of the barometer, in the western part of Stirlingshire, at the height of about 70 feet above the level of the sea, was, during a period of 11 years, $2\frac{80}{100}$ inches. The greatest height observed in that period, was $30\frac{92}{100}$ inches, and the least $28\frac{12}{100}$ inches.*

By tables constructed at Longforgan, on the banks of the Tay, the greatest range, during a period of 11 years, was $2\frac{80}{100}$ inches, the greatest height was $30\frac{92}{100}$ inches, and the least $28\frac{10}{100}$ inches.†

According to observations made at Gordon Castle, in the county of Banff, north latitude 57° 38′, and 80 feet above the level of the sea, the mean height of the barometer, during the year 1811, was 29.74 inches.

By the Belmont Tables published in the Forfarshire Report, the mean height of the barometer, for 3 years from 1790, was 29.59 inches nearly.

In Orkney, the range of the barometer is stated at three inches.‡

---

* Stirlingshire Report, p. 22.

† Statistical Account, XIX. 461.

‡ Dr Barry, p. 14.

2. *Of the Thermometer.*

In the parish of Longforgan, * in the Carse of Gowrie, the thermometer stood, at the average of 12 years, as follows.

Average of the whole year	50°.326
Greatest height	83°
The least	16°

At Delvin, in the Stormont, and county of Perth N. L. 56° 33′, in a period of 10 years, (the observations being made at 11 o'clock P. M.), the thermometer stood as follows.

Average of the greatest height	62°.5
——— of the least	39°.5
The greatest height observed (July 1787)	67°
The least height observed (Dec. 1788)	8°

N. B. These observations were made from the year 1783 to 1792, inclusive. During *the same years*, similar observations were made in Queen Street, Edinburgh.—It may be proper to state the results.

Average of the greatest height of the thermometer at Edinburgh, for a period of 10 years	61°.1
——— of the least	39°.8
The greatest height observed (June 1785)	71°
The least height observed (Dec. 1783)	11°

It may be proper to remark, with regard to these tables, which are to be found in the Statistical Account, vol. IX. p. 489, that the liberty has been taken, in constructing the above abstract, of altering 84, which is stated as the greatest heat of December 1784, into 48—as being probably an error of the press. In the Delvin table, 52° occurs as the greatest heat of December 1784—and in the Edinburgh table, 54° occurs as the greatest heat of December 1787. By the Belmont tables (Strathmore, Perthshire) for ten years from 1781, the greatest height of the thermometer (in 1785) was 84° of Fahrenheit; the least (in 1783) was zero.—The mean height, for these ten years was 46°.35.†

In the Upper Ward of Clydesdale, the average height of the thermometer for five years, beginning with 1768, was 49°

The greatest height observed (Aug. 1770)	66°
The least height observed (Feb. 1772)	27°

Observations made at the same place for five years, beginning with 1788, gave the following results.

The average height of the thermometer	$47^\circ\frac{8}{11}$
The greatest height observed (Aug. 1788)	62°
The least height observed (Dec. 1788)	27°

The time of making the above observations was at 9 o'clock A. M. ‡

---

* Statistical Account, XIX. 461.

† Stat. Acc. XIX.

‡ Clydesdale Report, p. 15. 14.

In the view of forming a just estimate of the climate of any country, nothing seems more proper than to multiply observations of this kind. There is a very interesting table given in the Clydesdale Report, p. 10, " of the extreme heat and cold in the Upper and Middle Wards, " on certain specified days and years. It is hoped that the insertion of this table will be considered as an important elucidation of this subject.

[*] Greatest height of the Thermometer.			Least height of the Thermometer.		
Year. Month.	Upper.	Midd.	Year. Month.	Upper.	Midd.
1785. June 25....	80°.	76°.	1783. Dec. 30....	30°.	24°.
26....	80°.	77°.	1784. Jan. 21....	31°.	17°.
27....	85°.	87°.	23....	35°.	20°.
28....	85½°.	84°.	25....	30°.	10°.
29....	82°.	80°.	27....	23°.	21°.
30....	82°.	80°.	Dec. 13....	28°.	16°.
July 26....	80°.	74°.	1785. Dec. 29....	25°.	11°.
1791. July 3....	81°.	66°.	30....	30°.	15°.
1792. Aug. 8....	78°.	70°.	1786. Jan. 2....	41°.	19°.
1793. July 9....	78°.	72°.	Dec. 20....	32°.	18°.
10....	84°.	71°.	1788. Dec. 16....	38°.	32°.
11....	77°.	66°.	1789. Jan. 11....	27°.	16°.

It will, at the same time, occur to the reader, that the results of this table, do not correspond with the rsesults, quoted immediately before, from the Clydesdale Report. In this last, the range of the thermometer appears to be of a much greater extent than in the former; and that too in the same year; for example in 1788. It is not here pretended to reconcile this discrepancy.

Dr Barry states the range of the thermometer in the Orkneys, to be from 25° to 75°, and the medium temperature of the year, to be 45°.[†]

The average temperature, at Duddingston, in Mid Lothian, during a period of 8 years, was as follows.

At sunrise.. 41°.908
At noon... 51°.250
The average of the whole........................ 46°.570[‡]

At Peterhead, in Aberdeenshire, N. L. 57° 29′ according to observations made for two years, the average temperature was.. 44°.124

At Dunnotter, in Kincardineshire, N. L. 56° 57′. 44°.400[§]

At Dundee, { Average, June, July, Aug. 63°.85
December, January, and February........................ 34°.78 [‖] }

---

[*] Clydesdale Report, p. 10.

[†] History of the Orkney Islands, p. 14.

[‡] Mid Lothian Survey, 1795.

[§] Aberdeenshire Report.

[‖] Statistical Account, VIII. 201.

By the Belmont Tables, the average height of the thermometer, for three years from 1790, was 42°. Forfarshire Report, p. 77. The greatest degree of cold was 21⅓°: the greatest degree of heat was 61⅔°.

At Drymen, in the western district of Stirlingshire, the temperature, during a period of 14 years, at the height of 70 feet above the level of the sea, was as follows.

The greatest height observed (July 1808)............ 80°
The least height observed (Feb. 1795).................. 6°
The medium greatest height during that period was 75°
The least ditto .... 16°
The medium temperature of the year .... 45°*

The following Table of the mean heat (for 4 years) of the different months and quarters, communicated by Mr Hoy, at Gordon Castle, merits particular attention.

	1808.		1809.		1810.		1811.	
	8H.A.M.	3H.P.M.	8H.A.M.	3H.P.M.	8H.A.M.	3H.P.M.	8H.A.M.	3H.P.M.
March............	36.19	41.	40.77	46.71	34.	38.20	40.93	48.90
April............	39.86	44.45	39.27	43.93	44.33	49.16	42.90	48.30
May............	54.29	58.52	52.45	58.80	45.55	50.29	50.90	56.68
Spring............	43.45	48.07	44.16	49.81	41.29	45.88	44.91	51.62
June............	55.93	61.80	55.26	59.	56.76	62.06	54.93	59.35
July............	62.06	66.35	56.71	61.20	56.80	61.10	57.90	61.58
August............	57.68	63.20	57.13	62.42	57.22	60.51	55.10	60.51
Summer............	58.56	63.78	56.36	60.87	56 95	61.22	55.97	60.46
September............	51.80	56.93	51.53	56.30	52.26	59.96	51.50	59.23
October............	49.58	45.74	48.76	53.42	45.20	51.19	43.13	53.84
November............	38.46	41.70	38.26	41.53	37.23	40.55	42.36	44.83
Autumn............	43.61	48.12	46.12	50.42	44.90	50.56	17.66	52.63
December............	35.	36.13	34.84	37.39	32.74	35.61	34.64	36.87
1809.								
January............	28 39	50.93	35.20	37.70	...	...	32.64	35.6
February............	36.14	40.43	33.61	38.21	...	...	34.57	38.18
Winter............	33.18	35.83	34.55	37.77	33.32	36.28	33.95	36.70
Year............	44.70	48.95	45.28	49.90	41.11	48.49	45.62	50.35

3. *Rain.*

The information with regard to the quantity of rain that fall annually in different districts of Scotland is very scanty, on account of the small number of observations that have been mad on this subject; and it even happens sometimes, that the observations that have been made in places of no great distance from each other, appear to be inconsistent.—Thus, at Belmont in Strathmore, the quantity of rain that fell, is estimated, on an average of 5 years from 1790, at 37.45 inches, whilst at Longforgan, not twenty miles distant, the result was 27.275 inches. But Belmont is situated at a considerable height above the level of the sea; and Longforgan, near the Firth of Tay, a few feet only above its level; which accounts for the greater quantity of rain that fell at the former; and affords another proof that more rain falls on elevated situations than on the low grounds.

---

* Stirlingshire Report, p. 14. 22.

A similar instance occurs in Mid-Lothian. At Barnton, the quantity of rain reported to have fallen in 1807, was 13.16 inches; whilst at Dalkeith, distant about eight miles, and situated in the same range of country, it was stated, in the same year, at 26.817 inches. The first is probably an error of the press; for in the two following years, the quantity that fell at Barnton is stated at 23.589, and 26.673 inches; whilst at Dalkeith, it is stated at 28.595, and 28.558.

In the present state of our knowledge of this subject, all that can be done is to state a few examples, taken from different parts of the country, in order to assist in forming some general conclusions.

In the following table, the first column shows the number of years of observation; the second, the *greatest* quantity of rain that had fallen in any one year within that period, given in inches and decimals; the third, the *least* quantity; the fourth, the average quantity of these years.

	I.	II.	III.	IV.
1. Glasgow,—Stat. Acc. Vol. V.	30	43.9	19.43	29.65
2. Belmont, in Strathmore,—Ib. XXI. *..	10	43.40	23.8	30.40
3. Peebles, in a hilly country, ...	14	36.532	21.967	28.7
4. Longforgan, on the Tay, ...	12	34.25	16.625	24.496
5. Dalkeith, in Mid-Lothian, ...	8	29.25	20.65	26.186
6. Duddingstone, near Edinburgh, ...	8	36.8	9.62	25.75
7. Mountstewart, in Bute, ...	7	58.135	37.121	46.641
8. Branxholm, in Teviotdale, ...	5	38.573	26.295	31.26
9. Langholme, in Eskdale, 12 miles from the Solway Frith, ...	5	39.3	34.161	36.733
10. Wool, 6 miles from Selkirk, hilly, ...	4	39.177	27.579	32.866
11. Bothwell, on the Clyde, near Glasgow,...	5	25.337	24.44	24.792
12. Peterhead, in Aberdeenshire, ...	2	32.162	29.565	30.863
13. Gordon Castle, ...	1	31.34	......	......
General average of all these, ...	....	......	......	30.83

In a Table, given by Dr Thomson, in his System of Chemistry, †, the quantity of rain that falls at some of the above places, is stated a little differently. He states the quantity to be,

---

* Vol. iii. 327.

† Stat. Acc. VIII. 201.

	Inches.
At Glasgow, at an average,	31.
At Dalkeith,	25.124
He adds (from the Manchester Transactions) Dumfries,	36.127
Hawkhill, (from the Edinburgh Philosophical Transactions),	28.966
Dundee, * *on an average of 9 years,*	22.12

The number of the observations which have been made on this subject, appears to have been inconsiderable; and it would seem that some of them are incorrect: yet, upon the whole, it may be concluded, that the average quantity of rain that falls in Scotland is about 31 inches annually. The greatest averages are those of Mountstewart, and Langholme, on the western coast: this is what might have been expected. But we are surprised to find the average of rain that falls at Peterhead, and in the neighbourhood of Selkirk, to exceed that of Glasgow. †

The truth seems to be, that the *quantity* of rain that falls annually in any country is a very inferior consideration, when compared with that of the general *distribution* of this quantity through the several days and months of the year. It is by *this* that the operations of agriculture are principally influenced; and it is *this* which chiefly determines the character of a climate, as wet or dry. In Grenada, north latitude 12°, the annual quantity of rain that falls is 126 inches; at Calcutta, north latitude 22° 23′, it is 81 inches; at St Petersburgh, north latitude 59° 16′, it is only 16 inches. ‡ In the two former, these enormous quantities of rain fall in the course of a few weeks, and the climate is accounted *dry:* In more northern latitudes, it is distributed over two-thirds of the year; and the climate is reckoned *wet.*—A distribution, in which we have abundant cause to admire the wise and beneficent accommodation made, in this respect, by Providence, to the diversities of soil that occur in different regions of the earth.

With regard to Scotland, it has been stated in the cursory view which has been given of the climate of its different districts, that it rains or snows (for no particular data occurring except in an instance or two, to enable us to make a distinction between these, they must be included under one article) for two-thirds of the year.

At Drymen, in Stirlingshire, on an average of 14 years from 1795, the state of the weather, in this respect, was as follows.

---

* According to a Table, lately published in the Forfarshire Report, (it is not said on what authority), the average quantity of rain that fell, at Belmont, for six years, is stated at 36¾ inches nearly.

At Crescent, near Dundee, it is 28 inches.

† The great cause of the difference, and even discrepancy, between the amounts of the quantity of rain that falls in different places, is the different construction of the various *pluviometers*, or rain-gauges, that are used by different observers. G. S. K.

‡ Thomson's System of Chemistry, Vol. III. 324.

Days completely fair - - -	158½
Days completely wet - - -	34½
Days showery - - - -	171½
Days in the whole year, more or less rainy	205½ *

By a table showing the number of dry and wet days in the middle ward of Clydesdale, on an average of 5 years commencing with 1768, it appears,

That the number of dry days was -	280
——————— wet days - -	85

By a table of the same kind, kept in the same district, for another period of five years, commencing with 1788, it appears that the proportion of dry and wet days was precisely as above; *i. e.* 280 dry, and 85 wet. †

In comparing these results of the Stirlingshire and Clydesdale tables, the reader cannot help being struck with the disparity that occurs, with respect to the number of days stated in each as *wet*. Of the accuracy of the Stirlingshire tables there is not a doubt. It seems probable that the small number of wet days, stated by the Clydesdale Reporter, arises from his having omitted to state as *wet*, those days on which only a shower or two had fallen.

In order to complete this subject of the *distribution* of the quantity of rain that falls annually in Scotland, it seems proper to offer the results of some tables which have occurred, stating the rain that has fallen, and the days that have been *wet* and *dry* throughout the *several months* of the year.

The first of these results that shall be offered is taken from the Drymen Tables, so often mentioned, and which may be consulted at length in the Stirlingshire Report, containing a detail of the state of the weather for a period of fourteen years, commencing with 1795. The following Table exhibits only the days that have been *completely fair*, *showery*, or *completely wet*, (the first marked C. F., the second S., and the last C. W.), through the several months of the year, for a period of five years, commencing with 1800. The average of each is subjoined.

	January.			*February.*			*March.*			*April.*		
	C. F.	S.	C. W.	C. F.	S.	C. W.	C. F.	S.	C. W.	C. F.	S.	C. W.
Days..........	52.	82.	21.	57.	56.	19.	65.	75.	15.	48.	92.	10.
Average	10	16	4	14	11	3	13	15	3	9	18	2

	May.			*June.*			*July.*			*August.*		
	C. F.	S.	C. W.	C. F.	S.	C. W.	C. F.	S.	C. W.	C. F.	S.	C. W.
Days	69.	77.	9.	86.	67.	9.	78.	72.	5.	79.	67.	9.
Average	13	15	1	17	13	1	15	14	1	15	15	1

---

* Stirlingshire Report, p. 10.

† Clydesdale Report, p. 13, 14.

	September.			October.			November.			December.		
	C. F.	S.	C.W.	C. F.	S.	C.W.	C. F.	S.	C.W.	C. F.	S.	C. W.
Days	73.	70.	7.	49.	82.	14.	74.	67.	13.	70.	59.	13.
Average	14	14	1	10	16	3	14	13	2	14	12	2

The two following Tables are extracted from the Clydesdale Report, pages 13, 14, and 17; the first showing the average number of *wet* and *dry* days throughout the several months of the year, during a period of five years, commencing with 1768, and during another period of five years, commencing with 1788; the observations being made in the Middle Ward of Clydesdale. It is necessary to repeat the remark already offered with regard to these tables,—that Mr Naismith has probably made no distinction between *dry* days and those on which *some* showers only had fallen.

The second Table shows the average quantity of rain which fell at Glasgow throughout the several months of the year, during a period of five years, commencing with 1788.

I. The average number of dry and wet days, for five years from 1768; and of other five years from 1788.

	January.		February		March.		April.	
	DRY.	WET.	DRY.	WET.	DRY.	WET.	DRY.	WET.
1st, From 1768, 5 years,	25.	6.	22.	6.	25.	6.	25.	5.
2d, From 1788, 5 years,	25.	6.	23.	5.	26.	5.	22.	8.

	May.		June.		July.		August.	
	DRY.	WET.	DRY.	WET.	DRY.	WET.	DRY.	WET.
First Period as above,	26.	5.	24.	6.	23.	8.	24.	7.
Second do.	24.	7.	23.	7.	21.	10.	24.	7.

	September.		October.		November.		December.	
	DRY.	WET.	DRY.	WET.	DRY.	WET.	DRY.	WET.
First Period as above,	21.	9.	22.	9.	20.	10.	22.	9.
Second do.	22.	8.	24.	7.	23.	7.	24.	7.

II. The average quantity of rain which fell at Glasgow, for five years from 1788, through the different months of the year, in inches and decimals.

Jan.	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Sum.*
2.81	2.364	1.584	1.983	1.892	1.607	3.431	2.142	3.59	2.698	2.502	4.134	30.829

The above statements, it is hoped, will suffice to show the *distribution* of the rain that falls on the west coast of Scotland.

In the Longforgan table,* given in the Statistical Account, Vol. XIX. p. 461, we have an instance of its *distribution* on the east coast, with a distinction of the days on which there was snow. The observations were made for 12 years, commencing with 1785. The average (without the distinction of months, which is not given in the Table) is as follows.

---

* The situation in which these observations were made, is about 14 miles from the German ocean.

	Rain.	*Snow.*	*Fair.*
Days	110 7/12	24 1/3	230 1/3

In the lately published Survey of Banffshire, a very valuable table occurs; embracing, with occasional interruptions, the state of the winds, of the thermometer, and barometer, and of the *weather*, from July 1803 to the 7th February 1809, both inclusive. It may suffice, on this subject, to offer the results of the observations on the *weather* for the years 1805 and 1808; premising, that in the column marked *fair*, are included the days set down in the tables as *gloomy* or *foggy*; and in that which is marked *rain*, the *showery* days of the table are included.

1. *The Weather of* 1805, *as observed in Banffshire.*

	Fair.	Rain.	Snow.
January	23	4	3
February	22	1	6
March	24	3	4
April	23	5	2
May	17	11	3 hail.
June	20	9	1 hail.
July	19	12	..
August	22	9	..
September . . .	17	13	..
October	20	9	2
November . . .	24	4	2
December	21	4	6

2. *The Weather of* 1808.

	Fair.	Rain.	Snow.	
January	9	10	12	
February	21	1	7	
March	24	1	6	
April	15	2	13	
May	25	5	..	
June	23	7	..	
July	18	13	The	31st a tremendous fall of rain.
August	16	15	..	
September	13	15	2	
October	16	15	..	
November . . .	26	1	3	
December . . .	17	5	9	

By the meteorological table kept at Belmont in Strathmore, for 10 years from 1781, it appears that the average distribution was as follows.

	Rain.	Snow.	Frost.	Fair.
Days	151	27	30	187

By *frost* is meant days of frost without snow; and constituting a part of the 187 fair days.

4. WINDS.

In the high latitude of Scotland, the winds are, as might be expected, extremely *variable*, both in their force and in their direction; and, in the more elevated districts, this character of *variableness* is greatly heightened, by the interference of lofty mountains, with their interjacent glens or valleys. The glens serve, in these situations, as funnels, to receive the blast which was proceeding, perhaps by many points, in a different course; but which being arrested by the mountains, is now diverted into the valleys, and, gathering strength from the interruption which it had met with, sweeps along with redoubled fury.

In the topical sketch of the climate which has been given, chiefly from the *Statistical Account*, it is repeatedly asserted by the intelligent contributors to that great work, that the wind blows, especially along the whole extent of the western zone of Scotland, for *two-thirds* of the year from a southerly point. These southerly winds bring genial warmth and moisture from the constantly equable temperature of the Atlantic. They prevail chiefly through the summer and autumn, and too frequently prove injurious to the operations of the latter. North or north-east winds appear to prevail, especially on the eastern coast, through somewhat less than one-third of the year. They are cold, and ungenial to animal and vegetable life; they generally prevail in the months of March and April, sometimes extending into that of May, and even of June. †

---

† The ingenious Dr Thomſon (Syſt. Chemistry, Vol. iii. p. 353, note) well obſerves, that 'the frequency of north-eaſt winds, during theſe months, is the 'greateſt defect of the climate of Scotland, and is felt indeed ſeverely over all 'Great Britain. In the United States of America,' he adds, 'theſe winds keep 'pace with the clearing of the land. Might it not be poſſible,' he aſks, 'to 'prevent the frequency of theſe winds, in this country, by planting trees along 'the whole eaſt coaſt?'

It may be permitted to remark, that Dr Thomſon, in this chapter, gives the juſt account of theſe north-eaſt winds, as really iſſuing from the arctic region, but neceſſarily deflected towards the eaſt, by their incapacity of reſiſting the rapidity of the earth's diurnal motion, within the polar circle.

But ſtill an important queſtion remains to be ſolved. Whence do thoſe immenſe maſſes of air originate, which are ſo copiouſly evolved within the polar circle, during the winter and ſpring, and which ruſh with ſuch impetuoſity towards the ſouthern regions; whilſt, during the ſummer and autumnal months, an oppoſite proceſs takes place,—the atmoſphere of the polar region experiencing a deficiency, which is ſupplied by a current from the ſouth? May not this ſtrik-

Having stated these general observations, with regard to the winds that are most prevalent in Scotland, it now only remains to illustrate them, by offering the results of some of the best authenticated tables that occur, relative to this subject.

At Drymen, in the western district of Stirlingshire, on an average of 14 years from 1795, the winds were observed to blow as follows.

Between North and East, ...	105½ days.
North and West, ...	91½
South and East, ...	29½
South and West, ...	137 *

The Longforgan tables give, on an average of 12 years, the following results.

Wind from the North, ...	25 days.
NE.	29
E.	62
SE.	14
S.	9
SW.	105
W.	102
NW.	19

By this last table it appears that the wind blows, even on the east coast of Scotland, from some point between the north and south, measuring by the western semicircle of the horizon, for 226 days of the year. †

A table given in the West Lothian Survey of 1808, affords a similar result.

---

ing circumſtance, it may be asked, be eaſily accounted for, by the obvious fact of the *evolution* and *abſorption* of atmoſpheric gaſes which annually take place within the polar circle, upon ſuch an immenſe ſcale, during the oppoſite proceſſes of *congelation* and of *degelation?* It is well known that a large quantity of air exiſts in water, in its liquid ſtate; and it is as well known that this air, together with all gaſeous bodies, are completely expelled from it, in the proceſs of congelation. Does it not follow, that whilſt the proceſs of congelation is going on in the polar regions, a period extending probably from November to May, vaſt maſſes of air are *evolved;* and that this cold and denſe evolution, ruſhing towards the ſouth, with a greater or leſs deflection towards the eaſt, conſtitutes our northerly and north-eaſt winds? When the heat of ſummer, again, comes to preponderate, the ice of the polar region melts; atmoſpheric air is *abſorbed*, until the liquid element is ſaturated. A vacuum is conſequently formed; and it is ſupplied, during the ſummer months, by contributions from the ſouthern regions. 'We may ſuſpect,' ſays Dr Darwin, (Botanic Garden, note on the winds), 'that there exiſts in the arctic and antarctic circles, a Bear or Dragon, yet unknown to philoſophers, which, at times, ſuddenly drinks up, and, as ſuddenly, at other times, vomits up one-fifteenth part of the atmoſphere.'—May the author of this ſection be permitted to flatter himſelf that he has, by the above ſuggeſtions, contributed in any degree, to the discovery of this bear, or dragon's den?

* Stirlingshire Report, p. 22. Stat. Acc. Vol. xix. 461.

† Stirlingshire Report, Ibid. Stat. Acc. Ibid.

Winds from the Westerly points,	232 days.
the Easterly,	120
due North,	10
due South,	3

By the Belmont tables the winds blow, on an average of 5 years,

From the South-east, nearly	88
From the South-west, nearly	137

In the Banffshire tables, the direction of the winds is stated with so many interruptions and chasms, that it appears impossible to generalize the subject. It may be sufficient to observe, that, according to that Report, 'the strongest currents of wind' in that quarter, and probably too, the most frequent, 'are from 'the west and south-west. In general,' it is added, 'we look 'for dry weather from the north and north-west, and for rain 'from the east and south-east.'

The remark of the ingenious author of the Aberdeenshire Report merits likewise to be recorded—'That when there is a 'great quantity of snow, lying undissolved, on the high moun'tains of Braemar, the south-west wind, in spring, is not a 'warm and mild zephyr, but is often attended with a piercing 'cold. When the snow either has not fallen, or is dissolved, 'then it is very pleasant. The south, and south-east,' he adds, 'are the most genial winds in Aberdeenshire, till the snows are 'melted on the south-west.' The same remark may be extended to every district in the island, situated on the east or north-east of lofty mountains, where the snow remains long undissolved.

Electrical Phenomena.

In describing the climate of Scotland, the phenomena of atmospherical electricity seem to claim some notice.

Excepting in the Orkney Islands, thunder occurs chiefly during the summer months. Its effects are sometimes, though not frequently, fatal. In the mountainous districts it is very seldom destructive, the elevated grounds acting as conductors in conveying the fluid to the earth. In level situations, and especially on the outskirts of sloping eminences, along which the electric stream had probably glided, or towards which it is directing its course, accidents from lightning are found most frequently to occur.

The *aurora borealis*, a phenomenon generally, and probably justly, considered as electrical, was scarcely remarked in Britain previously to the commencement of the last century. In the more southerly latitudes of Scotland, its appearances are by no means regular or constant; several years sometimes intervene between them. In the northern part of the island they occur with much greater frequency, as well as brilliancy. In the Orkneys, the light of the aurora borealis sometimes equals that of the moon in her quadratures. [*]

Considering it as highly probable that this meteor has its place within the region of our atmosphere, it may be expected that it will, in some degree at least, influence or indicate the state of the weather.

Accordingly, it is stated by the late learned Dr Small of Dundee, “ that the aurora borealis, except during a course of settled “ frost, is generally followed by wind and rain from the south.”[†] Dr Thomson, after suggesting the very probable hypothesis, “ that the aurora borealis is occasioned by the union of oxygen “ and hydrogen, in the polar regions, by the intervention of the “ electric fluid,” adds, “ that if this conjecture be true, part of “ the atmosphere near the poles, must, at times, be converted “ into water. ”—The evident consequence is the formation of a vacuum in those regions, which must be supplied by a current from the south. Dr Thomson cites the authority of Mr Winn (Phil. Trans. for 1772)—to show that this is actually the case; that a south-west wind blows always after an aurora borealis; that he never found this to fail in 23 instances:—That he observed that when the aurora was bright, the gale came on within 24 hours; but did not last long: but if it was faint and dull, the gale was longer in beginning, and less violent; but it continued longer. [‡]

Before quitting this subject, it is hoped that it will be permitted to the Reporter to state shortly the account of the rare phenomenon of an aurora borealis, which he had the good fortune to observe some years ago, *by day-light.*

On the 10th February 1799, some minutes after three o'clock P. M. the sun, being then a full hour above the horizon, was shining with an obscure lustre through a leaden coloured atmosphere. For several days before, the frost had been intense; and during the two preceding days, much snow had fallen. This day, however, it thawed, and the temperature was uncommonly mild. The Reporter was intently engaged in observing a large halo about the sun, which exhibited the prismatic colours, though obscurely, except in one quarter, where the halo coincided with a cloud which hung upon the skirt of the horizon, almost directly west: in that portion of the halo, the colours of the iris were very distinctly exhibited; the sky was, as to the rest, serene.

---

[*] Dr Barry, p. 16.

[†] Stat. Acc. VIII. 201.

[‡] Thoms. Chem. III. 353, 4.—The reader may compare Dr Thomson's hypothesis of the decomposition of atmospheric air, in the polar region, as the cause of south winds, with the theory advanced in the note at p. 37. It is presumed that these theories, though formed without concert, will not be found inconsistent with each other.

Whilst he was attending to this appearance, the whole horizon became covered with a light paleish vapour, as he at first imagined it to be. It was disposed in longitudinal streaks, extending from the west, by the zenith, and all along the sky, towards the east. On examining this appearance more narrowly, he found it to be a true aurora borealis, with all the characters which distinguish that meteor, when seen by night; with the exception that it was now entirely pale and colourless. The stream of electric matter issued, very perceptibly, from the cloud, on the south-western horizon, on the skirts of which the solar halo exhibited the prismatic colours: thence diffusing themselves, the rays converged towards the zenith, and diverged again towards every quarter of the horizon. The coruscations of the rays were equally instantaneous, and as distinctly perceptible, as they are by night, with the exception of the brilliancy and variety of the colours.

This appearance continued for more than 20 minutes, when it gradually vanished, giving place to thin scattered vapours, which, towards sunset, began to overspread the sky. It is remarkable that, during the ensuing night, no trace of the aurora borealis could be discerned. The weather, for some succeeding days, was mild:—It is not now recollected from what point the wind was; though it was probably from the south-west.

This phenomenon of an aurora borealis observed during the day, does not appear to be altogether new. The Reporter recollects his having met with an account similar to the above, given by Dr Henry Usher of Ireland, who, considering himself as the first observer of this appearance, requests, that any person to whom it may again occur, should communicate his observations to the public. *

Of the Effects of Climate on Animals and Vegetables.

It appears to be an unquestionable fact, that the animals and vegetables of the southern part of our island diminish in size, as they pass towards its northern districts. As the productions of the tropics fail, when attempted in the higher latitudes of the temperate zone; so those even of the south of Britain can seldom be brought to perfection in the north of Scotland. And yet, such is the bounty of nature, that every climate possesses its own peculiar productions, which arrive *there* at their greatest perfection. The native pines of Norway, and even of Inverness-shire, rival those of the most favoured regions. The cattle of the Hebrides, though not equal in size, are equal in beauty of form, and in flavour of flesh, to any in Europe. The same may be said of our native breed of sheep.

---

* Dr Usher's account, taken from the Philosophical Transactions, may be found in the Annual Register for 1788.

The lesson which this circumstance suggests to the agriculturist is obvious: it is this,—that exotics, whether of the animal or vegetable kingdom, should be introduced with scrupulous caution. The former may, indeed, be sometimes improved by crossing; and a breed, in some measure new, may be thus naturalized. But, in every experiment of this kind, nature should be consulted. In order to ensure success to the rearing, in the north of Scotland, the larger breeds of cattle which we meet with in the south, the luxuriant vegetation and genial climate of the latter must be previously introduced; and this, it is presumed, can be done only, though perhaps never completely, by superior cultivation, and by the abundant shelter of extensive plantations.

Seasons of peculiar unfavourableness to agriculture have been observed to recur, in Scotland, at intervals which seem to approach to regularity. It is said that some years of that kind occurred about the end of the 16th century; a similar course of unfavourable seasons took place about the end of the 17th century; and it is in the recollection of all, that the 18th century concluded, and the 19th was ushered in by seasons, which threatened us with the horrors of famine. About the middle, too, of the last century, from 1740, several bad seasons occurred; and that of the year 1782 will not be soon forgotten in Scotland.

In several elevated situations, where extensive strata of peat-moss occur, as in Lanarkshire and Tweeddale, and even on the borders of the low, but wide spreading moss, to the west of Stirling, early frosts, occurring in September, and sometimes in August, though comparatively of little severity, often do great injury to the grain, especially to peas, barley, and potatoes: and it is remarkable that the fields which lye lowest are sooner injured than those in the higher situations. This is to be accounted for by the circumstance that the frosty vapours exhaled during the day from the moss, are condensed at night upon the lower grounds; whilst the higher, tower above their reach.

In the Clydesdale Report, we are furnished with an ingenious scale of the different degrees of frost which injure certain kinds of vegetables. Mr Naismith's degrees are here reduced to Fahrenheit's scale.

	Fahr.
Potatoes, either in spring or autumn, have their leaves affected, and their growth checked at	30
Ditto, ditto, the stem attacked, and its farther growth prevented, and, if in autumn, the root makes no more progress - - -	28
Green peas and barley, when the ear is just becoming milky, spoiled at - - -	28
Beans, when green or wet - - -	27
Oats, when the ear is milky - - -	26

	Fahr.
Oats, when green, and the ear watery, on porous soils, not much hurt at - - - -	25
Ditto, ditto, on firm clay, ditto - -	22
Clover, in the tender leaf, hurt at - -	29
Clover and rye grass, in May or June, the crop is ruined at - - - - - - -	23
Turnips, on the ground in winter, injured at	8

Mr N. adds, that "these frosts do not injure the plants, ı "less they continue till the sun be above the horizon. Wl "the frost goes off before morning, and the sky is overcast w "fresh clouds, plants escape unhurt, though they may have s "fered a pretty severe frost during the night."

The philosophy of this well-known fact is obvious: it is ı the frost, even though extending 8 or 9 degrees below the fre ing point, that primarily injures the vegetable; it is the sud transition from cold to warmth, and the consequently too ra expansion occasioned by the heat of the solar rays, that te asunder the tender vesicles of plants, and is often fatal to th future growth.

Note.—In addition to the above, it may be stated, that by Belmont Tables, (Strathmore in Perthshire) the greatest hei of the barometer was (in 1789) 30.73, equal to 30.96 at level of the sea; the least in the same year, was 28.01, equal 27.24 at the level of the sea.

IV.

In treating the subject of the climate of Scotland, it appe indispensable to state the periods of seed time and harvest, or sowing and reaping, in its different districts. This is, indeed matter which depends, in a great measure, upon the condit of our ever varying seasons. In some years, the spring is e lier, and in others later. This year (1812) furnishes a rema able instance of retarded vegetation. Till the 9th May, at Al foyle, situated nearly about the middle of the isthmus forn by the approach of the Firths of Forth and Clyde, there scarcely any symptom of vegetation. It was on the 10th t the leaf-buds of the horse-chesnut (the Æsculus Hippocastanu were first observed to burst from their *hybernacula*, or wint covering. *—On this subject it may be permitted to remark, t a late commencement of vegetation ought not, in general, tc considered as an alarming symptom with regard to the ensuing produce. When vegetation commences vigorously in February or March, as is sometimes the case, the soil becomes exhausted at a too early period, and the ensuing crop (at least of grass) is often feeble and scanty. The crop of 1812, with all the tardiness of vegetation, promises well.

---

* It is exceedingly to be regretted, that almost none of our Scottish N ralists have thought of recording, from year to year, the *vernation* or *foliatio* our indigenous plants. Were we possessed of a register of this kind, kep the different districts of Scotland, we should be furnished with the most pe criterion of climate that can possibly be conceived; and, by comparing the

In detailing the periods of sowing and reaping the different kinds of grain in Scotland—a circumstance that seems to depend principally upon the latitude of any district, joined to local considerations, such as its elevation above the level of the sea, its adjacency to the east or west coast, &c.—it seems to be the most convenient method to divide Scotland, according to an idea already suggested, (p. 127.), into *three* great regions; the *first* being the *southern*, and bounded on the north by the approaching estuaries of the Forth and Clyde; the *second*, the *middle* region, bounded on the south by the above estuaries, and on the north by what is called the Glen, or Vale of Scotland, or the tract of the Caledonian Canal; and the *northern* region, extending from *that vale* to the extremity of the Island.

In describing the climate of these regions as it affects the periods of sowing and of reaping, the Statistical Account of Scotland, diligently explored, is the principal authority. Some County Reports are occasionally referred to. Dr Barry's valuable History of the Orkneys has been consulted.

Some separate notices, from the above sources, are offered, with regard to the Hebrides, the Orkney, and Shetland Islands.

1. THE SOUTHERN REGION.

Grains.	*Sown.*	*Reaped.*
Wheat . . .	from the middle of Sept. to Nov. .	In Aug.
Oats	from 1st March to middle of April .	In Sept.
Barley . . .	from 10th April to 10th May . .	In Aug.
Peas and Beans	from 1st March	In Sept.

Potatoes are planted in the end of April, or beginning of May, and taken up in October. [*]

On the eastern coast of this region, the harvest appears to be earlier than in most places of Scotland. In Berwickshire, the harvest is sometimes concluded (as in 1779) by the 12th September. In general, it is as early there as in any place in England north of the Humber. [†] In that district,

Peas are sown in February and beginning of March.
Oats ——— in March, or beginning of April.

---

ferences of *vernation*, in the course of a number of years, we might be enabled to make an approximation which no other *data* could afford us. The time of sowing and reaping is too vague a standard.

[*] Statist. Account, vol. V. 153; XI. 520; II. 129; VI. 413; IX. 318.

[†] Berwickshire Report, p. 23. Statist. Account, I. 122; VIII. 523.

Barley is sown in April, or beginning of May.

Wheat, in the end of September.

Turnips from the end of May to July: Mature in October.*

Potatoes, in April and May.

In 1785, Early Oats were sown near Prestonpans on the 5th April, and reaped on the 21st July.†

In the more elevated grounds of this region, viz. Lanarkshire, Tweeddale, and Selkirkshire, the seed time is often late, and the harvest consequently so also.‡ The crops are often injured by early frosts.§ Oats, peas, and beans, are sown in March; barley in the beginning of May; and wheat in October. Harvest commences in the beginning of September, and sometimes is not concluded till the month of November.‖

2. MIDDLE REGION.

On the eastern coast of this Region the harvest is early.¶

In Strathmore, in Perthshire, the different grains are sown as follows.

Wheat, in October and November; reaped in the end of August.

Oats, sown in the end of March, and beginning of April; reaped in the end of September, and beginning of October.

Peas and flax, sown in the end of April.

Potatoes planted in the end of April.

Harvest in September and October.**

In Angus-shire, the periods are the same for the above kinds of grain. There, wheat is sown in September and October; harvest begins about the end of August, and is generally concluded by the middle of October.††

In Fifeshire, Wheat is sown from the middle of September to the end of November.

Peas and beans, in February, or the beginning of March.

Oats in March, and to the end of April.

Barley in May.‡‡

In Aberdeenshire, the periods are as follows:

Wheat is sown in the end of harvest, reaped in August.

Oats and peas in March; reaped in September.

Barley sown in the three last weeks of May; reaped in August.

Turnips sown in the three last weeks of June.§§

In the southern parts of Argyleshire, oats are sown from the 6th to the 26th April, and barley the 2d and 3d weeks of May.

---

* Statist. Account, XI. 233.

† XVII. 62, 63.

‡ Clydesdale Rep. p. 6.

§ VIII. 79; XIV. 109.

‖ Stat. Acc. I. 190; II. 300; VI. 59, 555.

¶ XIX. 300.

** Ib. xix. 349.

†† III. 223.

‡‡ Ib. I. 380, 415, 450; III. 80.

§§ Ib. V. 100; IX. 139; II. 520; III. 52; VI. 86.

Potatoes are planted in April. The hay harvest (of natural grass) occupies the attention, more or less, from the end of July to the end of October. The grain harvest begins in September, and is concluded about the end of October.[*]

At Kilmalie, on the borders of Argyleshire and Inverness-shire, oats are sown in the two last weeks of March; and reaped from the beginning of September to October.[†]

Barley is sown in the end of April and beginning of May; and reaped in the end of August.[‡]

In Kintyre, seed time commences about the 22d March, and the crop is generally in by the middle of September.

In the two above districts, the hay harvest of cultivated grasses begins about the 20th June, and extends to the middle of July.

3. NORTHERN REGION.

However strange it may appear to our southern neighbours, it is an unquestionable fact, that the period of reaping the different kinds of grain, in the very northern extremity of Scotland, is nearly as early as in the southern. The commencement of vegetation is indeed late. Till the summer solstice, the progress is very inconsiderable; but it becomes very rapid in the months of June, July, and August, [§] which is no doubt to be accounted for, in a great measure, from the length of time that the sun in these regions continues above the horizon.

Near Dingwall, seed-time commences about the middle of March, and sometimes later; harvest commences about the first of September.[‖]

In Inverness-shire, oats are sown in March, or in the beginning of April, and reaped from the 1st of September.

Barley in the end of April or beginning of May; and reaped in the end of August or beginning of September. Harvest, in general, in September.[¶]

In Ross-shire, peas, oats, and rye, are sown in March and April; and barley, from the last week of April till the last week of May. Harvest extends from the middle of August to the middle of October.[**]

In Sutherlandshire, the periods of seed-time and harvest are the same, adding only that the barley seed-time is sometimes extended to the beginning of June.[††]

In Caithness-shire, oats and peas are sown about the end of March and beginning of April; barley from the 13th May, and sometimes as late as the 21st June. Barley is reaped in August. Harvest is generally finished by the end of September.[‡‡]

---

[*] Stat. Acc. III. 171, 100. [†] XI. 424. [‡] XI. 277.

[§] XIX. 6. [‖] III. 9. [¶] XVI. 225, 268; III. 28; XI. 267; XV. 303.

[**] III. 392; VI. 186; XIV. 90; XV. 618.

[††] VIII. 369; III. 541; XVI. 187. [‡‡] VIII. 5. 147; XVII. 25.

THE HEBRIDES.

In the Lewis, black oats (the kind chiefly used) are sometimes sown in March, but not generally till the middle of April. Barley, from the beginning of May till the end of June. Potatoes are planted from the middle of April to the 20th May. Harvest begins about the middle of September. Barley is sometimes reaped in the end of August. *

In Mull, oats are sown from the 20th March, and reaped in the beginning of October. Barley is sown from the end of April; and is reaped from the middle of August.

In Skye, seed-time continues from the 20th March to the middle of May. Harvest commences about the middle of September, and continues till towards November, or even later. (Statistical Account, XVIII. 182.)

THE ORKNEY AND SHETLAND ISLES.

Dr Barry informs us, that they begin to plough in the "Orkneys about Candlemas, O. S." that is, about the middle of February, "when they plough their oat land, into which they throw their seed (the black or grey oat), two or three weeks afterwards: and when this is finished, the bear land begins to be stirred or harrowed; and commonly receives the seed near the end of May." † "The harvest commences commonly about the beginning or middle of September." ‡

From the Statistical Account, we learn that black oats are sown in March and the beginning of April; and bear or barley in May, to the 20th. Barley is reaped in August and September, and harvest is generally finished by the first of October. §

Oats are sometimes sown in the end of February. ||

In the Shetland Isles, oats are sown in March; and bear about the end of April, or beginning of May. They begin to reap about the middle of August, and sometimes later, according to the season. ¶

V. REMARKS ON THE ANCIENT STATE OF THE CLIMATE OF SCOTLAND.

It appears probable, from some suggestions of ancient authors, that the climate of Britain has been milder in former times than it is at present. Julius Cæsar, in whom science and valour were happily combined, gives us the earliest and most authentic information concerning our island. He landed in England, according to the computation of Dr Halley, upon the 26th of August. When his soldiers went out to forage, they found that all the

---

* Statist. Acc. XIX. 250, 277, 285.

† Dr Barry's Hist. of the Orkneys, p. 349.

‡ Ib. p. 351.

§ Stat. Acc. XIV. 320; XVI. 419.

|| XVI. 253.

¶ XIV. 320.

corns were reaped, except in one district, where they accordingly set about cutting them down.[*] This marks an earlier harvest than now occurs, even in the south of England. He states again, 'that the climate was more temperate, and the cold less severe, than in Gaul.'[†] Tacitus, though we have no reason to believe that he ever was in Britain himself, having received the most accurate information concerning it from his father-in-law, Agricola, who had resided there for at least six years, informs us, that 'the sky was foul with continual rains and fogs; but that it was free from the rigours of cold.'[‡] Flavius Vopiscus, in the Life of Probus, (A. D. 278), relates, 'that the emperor gave permission to the Britons to raise vines, and to manufacture wine.' And Beda, in his Ecclesiastical History,[§] assures us, that, in some places of Britain, 'vineyards were cultivated.'

This argument of the modern deterioration of the climate of Britain, and of Scotland in particular, may be supported by the consideration of the inferior size of the wild animals that are now produced. From the fossil horns of deer which are still found in our mosses, it is evident that, in former times, their size far exceeded that of the present breed.

The productions of the vegetable kingdom serve to strengthen this argument. The fossil trees found in our mosses evince a more genial climate, at a former period, than we now enjoy. Many instances might be adduced: a few must suffice.—In Dalserf parish, in Lanarkshire, 500 feet above the level of the sea, the trunk of an oak tree was dug up, 65 feet in length, as straight as the mast of a ship, and so equal in thickness at both ends, that it was not easy to say which was the root. The largest tree that is certainly known to have existed in Scotland, was a horse-chesnut at Finhaven, in Forfarshire. It measured 42 feet 8 inches in circumference 5 feet above the ground. It had two large branches, one of which was above 29, and the other 19 feet in circumference. It was entire in 1700; but was so much decayed in 1750, that a gentleman who went to see it, mistook it for an old pigeon-house. A plate of it is in the library of the University of St Andrew's, and in several private libraries. In 1770 it was almost entirely rotten. In the forests of Braemar, in Aberdeenshire, there are several fir trees above 6 feet in diameter, and near 19 feet in circumference. Fir trees, 100 feet long, have been found under moss. On draining Hartfield Moss, in Yorkshire, an oak was found which measured 120 feet in length, 12 feet in diameter at the root, and 6 feet at the upper extremity. No such tree, probably, now exists in Europe.[||] In the middle of the Torwood, in Stirlingshire, are the remains of Wallace's celebrated oak, which, according to an admeasurement made, while entire, was said to be about 12 feet in diameter[*]. Mr Aiton states (on the authority of Athenæus),[†] that when Archimedes could not find, upon the shores of the Mediterranean, a tree fit for being the mast of a very large ship that he had built, he was obliged to commission one from Britain, which was transported to Syracuse on a machine made for the purpose.

---

[*] Cæsar de Bell. Gall. L. iv. 32.

[†] Ib. L. v. 12.

[‡] Vit. Agric. 12.

[§] Lib. i. ch. i.

[||] Aiton's Treatise on Moss Earth, Introd. p. 26.

It appears, from the records of religious houses, that wheat was formerly paid as tythe from lands in the parish of Lesmahago, in Lanarkshire, where, for several centuries past, oats can scarcely be brought to perfection. A farm in Glenluce parish formerly paid, in tythe, 12 bolls of wheat, and 12 bolls of barley, which was let about 30 years ago for a rent of only 12*l*.[‡]

At present, it is well known that the climate of Britain is colder than that of France—that intense and long continued frosts frequently occur, especially in the interior of the country—that the vine can no longer be cultivated successfully in the open air—and that the size of many wild animals, and of trees, is diminished.

The ingenious Mr Aiton, with much plausibility, ascribes this deterioration of the climate to the immense accumulations of moss earth which have taken place, by the demolition of forests, since the period that the Romans established themselves in Britain.[§] Moss earth is peculiar to countries situated in a high latitude. It is produced by the accumulation of vegetable substances in a decayed and inert state. Its bulk is increased gradually by the addition of vegetables of the mossy tribes which grow upon its surface. Of all other soils, peat earth absorbs and retains the greatest quantity of water: 32¼ ounces of dry moss soil will retain, without fluidity, 18 ounces of water; whilst 39 ounces of the richest garden mould will only retain 18½ ounces. Moss is also more retentive of cold than any other soil; frost is often found to continue in deep mosses till after the middle of summer. Hence the effect of mossy accumulations, in rendering the climate colder. The cold evaporations which arise from such immense tracts of this soil as exist, particularly in Scotland, chill the atmosphere, and increase the bleakness of the climate. Particular instances will be given in their proper place.

That most of the great tracts of moss soil which deform Scotland, have had their origin posterior to the Roman invasion, will be easily granted:—that the great moss which extends westwards from Stirling, through a tract of about 16 miles, was formed by cutting down a part of the Caledonian Forest, we have historic, and almost ocular demonstration.‡ That the vast tracts of ground which are now covered with deep moss in Lanarkshire, Ayrshire, and Dumfries-shire, were clothed with flourishing forests, as late as the 12th century, is equally certain. But that many tracts of moss, on higher elevations, owe their origin to a much earlier catastrophe, there is, notwithstanding the reasoning of Mr Aiton, good ground to believe. It is certain, that on the north-eastern side of all our mountains, sometimes at the height of 1500, and even 2000 feet above the level of the sea, we meet with deep mosses, which do not appear to owe their origin to the destruction of forests, (nor is it probable that forests ever existed there), but to the accumulation of vegetable matter conveyed thither by some other powerful cause.† If any trees are found in these elevated mosses, which is seldom the case, they are found, as Dr Walker has stated, lying in the direction of SW. and NE.

---

[*] Stat. Acc. III. 336.

[†] See Dr Henry's Hist. of Britain. London, 4to edition, 1771, Vol. I. Book I. ch. vi. p. 380.

[‡] The above facts are taken chiefly from Mr Aiton's ingenious treatise on Moss Earth. The liberty has been taken, however, of making a few alterations and corrections, necessarily suggested by collating the original authorities.

[§] Aiton's Treatise on Moss Earth, Introduction.

These mountainous mosses, however, are seldom of great extent. The low lying mosses, of later origin, are not only more extensive, but, from their greater degree of moisture, and, consequently more copious evaporation, have, unquestionably, the greatest influence upon the climate.

It may be objected, that the whole country having been, in the time of the Romans, covered with forests, their effects upon the climate must have been nearly the same with those of moss, in screening the soil from the rays of the sun, and in preventing the evaporation of moisture.

This is, no doubt, partly true. A country covered with wood, like America, is colder than a country of the same latitude that is cleared. But besides that in a country of so unequal a surface as Scotland, even though it were covered with trees, the rays of the sun would have room to penetrate, it may be remarked, that there is a wide difference between the degree of cold and moist exhalation produced by the overshading of trees growing in a dry soil, and the chilling vapours that proceed from a vast mass of cold, inert, and spongy peat earth.

Whilst it thus seems to be probable that the climate of Scotland has suffered deterioration since the period that the Romans occupied Britain, there is reason to conclude, upon the other hand, that it has been ameliorated, within these last hundred years, by the improved modes of cultivation that have been introduced, particularly by draining, by deep ploughing, and by shelter furnished by the increase of woods and plantations. It is indeed a common complaint of old men, that the climate is every year becoming worse; and that the weather is now bleaker and colder than it was in their younger days. This, however, it is presumed, may be easily accounted for, from the natural querulousness of old age; and from the propensity which old men have to attribute superiority of excellence to every object and event which belonged to that period of their lives, when the mind was cheerful, and the body full of health and vigour. Instances have been already given of undeniable improvements of the Climate, which have been recently brought about, by deep ploughing only, and the consequent drainage of a wet soil.

---

‡ See an Essay by the Reverend Mr Tait of Kincardine.—Edinb. Phil. Trans. Vol. III.

† See Stirlingshire Report, p. 35, &c.

* * *

APPENDIX, No. VI.

ADDITIONAL PARTICULARS REGARDING THE MINERALS AND FOSSILS OF SCOTLAND.

By MR GEORGE ROBERTSON.

BESIDES the general account of the minerals and fossils already given, in the First Chapter of this Report, the following articles merit some attention.

1. A statement of those particulars, regarding the more valuable minerals, as were judged too minute to be inserted in the Fifth Section of that First Chapter; 2. A short account of the scarcer minerals, which were not mentioned in that Section; and, 3. Some additional particulars regarding the precious stones or gems.

1. OF THE MORE VALUABLE MINERALS.

1. With respect to that most valuable mineral *Coal*, it has been observed, that so far from apprehending any danger of its being soon exhausted, there was every reason to conclude, that the principal of the three great fields of coal, which extends from the German Ocean, to the Firth of Clyde, alone, contained as much coal, as would supply the country for 3000 years. In proof of this, it may be stated concisely, that this great coal field, is, on an average, thirty-three miles in breadth, and ninety-eight miles in length, or contains an area of 3234 square miles; and, after deducting the space covered by the river Forth, extends nearly to 2874 miles; and that a single square mile, at an average of the depth, of the quality, and quantity of accessible coal, and deducting the space occupied by pillars, is much more than the annual supply of coal, for the whole of Scotland. It is unnecessary to enter upon minute calculations, where the quantity estimated is clearly within the truth. For, instead of 640 acres, or a square mile, it has been calculated, upon probable data, that 172 acres, or little more than one-fourth of a square mile, is sufficient. After making, therefore, the largest allowance for pillars and wastes, it cannot be doubted, that 640

acres is more than sufficient for an annual supply, and that the principal coal field of Scotland, would alone serve us for 3000 years. In some parts of the tract above described, coal may not always be met with ; but this want is compensated, by the greater abundance, and the additional seams, where it is found.

2. In regard to Lime, it deserves to be mentioned, that the principal lime-works in Scotland, are,

	Bolls.
1. Lord Elgin's at Charlestown, in the Firth of Forth, yielding annually, - - -	400,000
2. Closeburn and others in Dumfries-shire, - -	100,000
3. Stobs, in Roxburghshire, - - -	10,000
4. Craigie, Loudon, and others in Ayrshire, -	150,000
5. New Kilpatrick, and others in Dunbartonshire,	60,000
6. Campsie in Lennox, and others in Stirlingshire,	100,000
7. Torphichen, Bathgate and others, in West Lothian,	80,000
8. Gilmerton, the Raw, Crichton and others, in Mid-Lothian, - - - - - -	140,000
9. Salton, Pencaitland and others, in East-Lothian	150,000
10. Forthan, the Bunyan, and others in Fifeshire,	50,000
11. Hedderwick, Hill of Peat, and others in Forfarshire, - - - - - -	100,000
12. Mathers and others in Kincardineshire, -	30,000
13. Ardonald and others in Aberdeenshire, -	100,000
14. The northern counties, including Banff, Moray, Nairn, &c. - - - - -	100,000
15. Lanarkshire, and other western counties, -	230,000
16. Perth, Kinross, and Clackmannan, and other midland counties not mentioned, - -	100,000
17. Galloway, and other southern counties, -	100,000
Total,	2,000,000
It is supposed that, including all the small kilns, scattered over the kingdom, there may be one-half more,	1,000,000
Total lime in Scotland,	3,000,000

—or nearly 600,000 English chalders, besides considerable quantities imported from England on the east coast, and from Ireland on the west.

3. The principal Slate Quarries in Scotland, are,

1. Easdale and other islands in Argyllshire, -	5,000,000
2. Balachulish, and others on the mainland of that county, - - - -	3,000,000
3. Luss in Dunbartonshire, - -	500,000
4. Monteith, Strathern, Stormont, and others in Perthshire, - - -	2,000,000
5. Strathmore, - - - -	500,000
6. Garioch, Strathbogie in Aberdeenshire,	1,000,000
Carry over,	12,000,000

Brought over,	12,000,000
7. Banffshire, and northern counties, -	1,000,000
8. Stobo in Tweeddale and Galloway, -	1,000,000
9. Others not specified, - -	1,000,000
In all,	15,000,000

This, at 40s. *per* thousand, which in 1812 is nearly the average price, is 30,000*l.*

II. OF THE SCARCER MINERALS.

The scarcer minerals are next to be considered, and shall be ranged alphabetically.

Alum.—A very important alum-work is carried on at the Hurlet in Lanarkshire, where it is found in the waste of a coal-mine. A rock of this material, is said to have been discovered among the mountains in the parish of Moffat; but its intrinsic qualities have not been ascertained. There is a spring, strongly impregnated with alum, on the hill of Leven Seat, on the confines between Mid-Lothian and Lanarkshire.

Amianthus or *Stoneflax,* together with every other variety of asbestos, is to be met with in several places in Scotland. The place where it is most plentiful, is perhaps at the head of Strathbogie in Aberdeenshire, where it is to be found in the bed of a small streamlet, that descends from a hill in the parish of Auchindore, called Towin-reef. It is, however, more a subject of curiosity than of value.

Antimony.—There was a valuable mine of this discovered in the year 1788, on the lands of Glendonwine, at the head of Eskdale in Dumfries-shire. It belonged to the late Sir James Johnstone. It gave employment to 40 miners, and is almost the only productive mine of antimony in Britain. Here the miners, like to those of Leadhills, worked only six hours in the twenty-four; and like them too, had a circulating library, to relieve the mind from the tedium which so much spare time would otherwise occasion, and to prevent getting into a habit of dissipation. The sulphuretted antimony of this mine, sold at 42*l.* the ton, and the regulus of antimony at 80*l.* There is some indication of this mineral in the parish of Stair in Ayrshire.

Bitumen.—This is mentioned as a mineral production in the parish of Birsay and Harray in Orkney. In some cases it exudes from the rocks like a thin oil. In other cases it is found of the consistence of pitch, and is called Petroleum. In that state it is found in many freestone quarries, particularly in the parish of Duddingston, near Edinburgh.

Black-lead or *Plumbago.*—A mine of this has been discovered on the lands of Dalmore in Ayrshire, and another at Huntly in Aberdeenshire, which were found to answer most of the purposes of that useful mineral.

Cobalt.—This metal was found, about forty years ago, on the lands of Alva in Stirlingshire, in considerable quantity, and of an excellent quality, as applicable to the manufacturing of china and of glass. Specimens of it are also to be met with in Glenorchy.

Coral and *Corallines* are found on the coast of Banffshire. There is much coral on the coast of the south end of Kintyre; also in one of Lord Dumfries's lime quarries in the parish of Old Cumnock, and in the coal pits in the vicinity of Paisley; much of it also is found on the sea-coast of the isle of Colonsay.

Emery is found in considerable quantity, and good in kind, near to Castle-Sinclair in Caithness.

Fuller's Earth is found in different places in the parish of Hamilton; in the parish of Falkland; in the coal pits near Sanquhar, and in the parish of Uphall.

Gypsum is plentiful on the banks of the Whitadder in the Merse.

Manganese is found on the lands of Magbiehill in Peebles-shire; in the Isle of Jura; in the parish of Duddingston, near Edinburgh; in the vicinity of Aberdeen, where it was lately wrought to some extent; and on the lands of Fordoun in the Mearns.

Mundic, both yellow and white, is found in Sir John Sinclair's lands of Skinnet in Caithness.

Osmund-stone, celebrated for resisting heat, on which account it is in great request for building ovens and furnaces, is found in great plenty in the parishes of Egleshame and Paisley. A stone of the same nature also abounds in the vicinity of Burntisland, and is in extensive demand for the same purposes.

Porcelain earth has been observed in many places, arising from the decomposition of felspar in granite; but it has not yet been observed in beds: And siliceous spar, or quartz, the Chinese *Petunse*, so useful in the manufacture of china ware, is found in great abundance and perfection on the hills of Caithness.*

Potter's earth is found in many places, particularly in the parishes of Hamilton and Maryculter, and in the parish of Inveresk, where there are some extensive potteries in a thriving state.

Whetstone.—The best whetstone for edge-tools, that is perhaps in Europe, is to be found in great abundance, on the estate of Dalmore, in the parish of Stair in Ayrshire. It is known by the name of *Water-of-Ayr stone.*

III. PRECIOUS STONES AND GEMS.

Agates.—These, under the various names of onyx, sardonyx and pebble, are to be met with in every part of the country where basaltic rocks are found. The agate is never found in granite. Besides being found thickly strewed in the rock itself, they are to be met with in almost every brook in the vicinity of basaltic rocks, from which, in the course of time, they have been washed by the rains. *The Scots Pebbles* are of many beautiful hues; blue and white; red and white; and frequently to be met with of all these colours, blended together in veins, and in every gradation of shade.

---

* See Forfarshire Report, p. 12. To *petunsé*, and white clay, when mixed, the Chinese give the name of *Kaolin*, from which their beautiful earthen ware is formed.

Amethysts, of considerable intensity of hue, have been found at Ely in Fife, and have been long esteemed as rubies. Amethyst also frequently occurs in the internal surface of hollow agate balls, or geodes, which it lines in beautiful crystals.

The *Aqua-Marine* is found in Scotland, particularly in the Isle of Arran, where a specimen was found, one inch in length, and one-third of an inch in breadth.

The precious Beryl is a very rare mineral in Scotland. Small specimens, exactly similar to those of Siberia, have been found in the Mountains of Mar, Aberdeenshire.

The *Garnet*.—Some fine garnets have been found in different places, as in the parish of Cairny in Strathbogie, the isle of Unst in Zetland, and in the parish of Tillicoultry, Clackmannanshire. The precious garnet of Werner also occurs as a constituent part in much of the *mica slates* of Aberdeen and Ross shires.

Jasper.—Although this species of stone is so abundant, as to have been already included among the building stones, yet there are many delicate specimens of it to be met with, particularly in Ayrshire, which, from the fineness of the texture, and elegant variety in the colour, are exalted into the class of gems, and cut into seals, ear-rings, snuff-boxes, and other ornaments.

The *Rock Crystal*, is commonly denominated *Cairngorum*, from the mountains of that name in Banffshire. But rock crystal is found in every mountain in the primary districts of Scotland, and in peculiar abundance, on the mountains of Aberdeen and Banff shires. The colours of these crystals are, yellow of different shades, and clove brown, approaching to black. The deeper yellow specimens sell high; and are commonly, but improperly, termed by the jewellers topazes. The clove-brown colours, more peculiarly termed cairngorums, are also valued in jewellery; and the dealers are said to possess the art of making these dark colours assume lighter shades, by exposing them to a considerable heat, very gradually raised.

The *Topaz* is the most brilliant of the gems hitherto found in Scotland, where it occurs in abundance, and of a size not as yet observed in any other country, not even in Siberia, Saxony, or Brazil. It is found plentifully only on the highest ground of Scotland, viz. in the mountains of Mar, and in the extensive range which stretches towards Perth, Inverness, and Banff-shires. It occurs chiefly in rolled pieces, sometimes in its gangue, which is granite; the form of it, regular crystals, in an eight-sided prism, deeply bevelled at the extremity: Its most common colour is a very light green, or greenish white, and hence the name given to it, an *Aqua-marine*. This colour is accompanied with a slight opalescence. Another colour of it is, a very light blue, and in that case it receives the name of *Sapphire*. These are the only colours of the Scottish gem, which is never reddish yellow, or wine yellow, like the topazes of Brazil and Saxony. The largest topaz yet known, was found on the estate of Invercauld in Aberdeenshire, and is in the possession of Mrs Farquharson. It weighs 15½ ounces troy; and the same lady has several others, which are nearly of an equal size. But the largest topaz found on the continent of Europe, weighs little more than 4 ounces.

The true distinction between the rock crystal and the real topaz, was not understood till lately. They still are often confounded, from the mistakes or avarice of those who sell them. The following marks will distinguish them on the slightest inspection. The true topaz of Scotland, (the principal gem of the country), besides its peculiar form of crystal, mentioned above, has a specific gravity of 3.6, a foliated structure, and a greenish white, or a light blue colour. The rock crystal or cairngorum, whether colourless, light brown, dark brown, black or violet, (in the last case called amethyst), has crystals that are six-sided prisms, terminated by six-sided pyramids. The sides of the prisms striated, those of the pyramid smooth. The specific gravity, far less than that of the topaz, is only 2.6; a difference discernible, by only poising the stones in the hand.

The chemical composition of the rock crystal is pure silex; that of the heavier topaz, 70 *per cent.* of pure clay, with 30 of silex.

Within these few years, many acres of alluvial soil, have been dug up or trenched, on Cairngorum, Benavon, Benaboard, Benimean, Lochnagar, and other mountains of Mar, in search of topazes and rock crystal; the demand for them having become considerable, both in London and in Edinburgh. They are found indiscriminately in the same soil; but the topazes in far greater proportion than the brown or yellow rock crystal. The latter, however, occur sometimes of an enormous size; and Mr Farquharson of Invercauld has one of a nut brown colour, which is as large as a child of a year old.

A very large one, but somewhat of a dusky hue, was found lately. It weighed 308 ounces, and a lapidary in Edinburgh gave L.100 for it. He has converted it into a number of beautiful articles, among which are some snuff-boxes. It is said, that he has already sold to the amount of L.350, and that the half of it is yet on his hands. There are even some larger stones than this, and others of more value, though not so large. One was said to have been sold for L.1200.[*]

---

[*] Two very fine topazes were carried to a London jeweller by Mr John Jeans, an excellent mineralogist of Aberdeen. The jeweller said that he had never seen any finer oriental topazes, and asked from "what part of the East they had come;" Mr Jeans replied, "from the mountains of Mar in Aberdeenshire." The jeweller started back, and said, "*Sir, I cannot purchase them at any price.*" The philosopher took his leave, saying, *And I will not, for any price, tell a lie in Natural History.*

Pearls.—Scotland seems to have been more famed for this elegant gem formerly than it is now. The great celebrity the Scottish pearls acquired in the London market, and the high price which was the consequence of it, has occasioned the best stations of the fishery to be nearly exhausted by the avarice of the undertakers. The pearl is always found in the *mytilus anatinus*, but takes a considerable time to come to maturity; and by destroying too many pearl mussels, in order to get all the jewels, it must be a distant period indeed, before they are found in great quantity. This has been especially the case with the pearl fishery on the river Tay, which was so productive, as to produce L.10,000 between the years 1761 and 1764; but, soon after, dwindled down to very little, and has been in an unprosperous state ever since. Pearls from the Tay, sold then at from 10s. to 1*l.* 10s. per ounce, and one was found that weighed 30 grains. Next to the Tay, the Ythan, an Aberdeenshire river, has been the most celebrated for pearls. Some of the pearls in the Scottish crown, are said to have been obtained from this river; there are still a few to be had in it, which are esteemed very good.*

Pearls are found in the Dee in Galloway; in the Clyde, in the Teath, in the Devon, in the South Esk of Angus, in the Dee of Aberdeenshire, and in the Cluny water, one of its tributary streams. They are also to be met with at the head of Loch Tay, where the fishermen pick up a little money for them, from the casual resort of travellers to that romantically rural part of the country.

APPENDIX, No. VII.

ON THE WATERS OF SCOTLAND.

By Mr George Robertson.

It is proposed, in this number of the Appendix, to give a particular description of,—1. The Principal Rivers; 2. The Fresh Water Lakes; 3. The Friths and Arms of the Sea, provincially called *Lochs*; and, 4. the Mineral Waters of Scotland.

1. RIVERS.

It is proposed to limit this detail to the principal rivers and streams which fall direct into the ocean, commencing with the

---

* About sixty years ago, Mr Tower, a merchant in Aberdeen, carried a parcel of the Ythan pearls to London, and not being aware of their value, asked 100*l.* for them, meaning *Scots money*. The London jeweller offered him at first 80*l.*, and ultimately agreed to give him the 100*l.* that he asked, and paid him in *Sterling*. The shrewd Aberdonian saw the mistake, but pocketed the money, which was twelve times as much as he expected, and from that time forward knew how to appreciate pearls.

Tweed on the east, and going round the coast by the east, north, and west sides, and end with the Esk on the south.

1. The *Tweed*, (*Tuaid*, north place, this being north of England), rises in the south-west corner of the county of Peebles, and runs in an easterly direction through the counties of Peebles, Selkirk, and Roxburgh, and along the boundary betwixt Berwickshire and England, about 80 miles in its course, and falls into the sea at Berwick, carrying with it the waters of about 1870 square miles of country. It is a beautiful limpid stream, running at first through a fine pastoral, and afterwards through a richly cultivated country, highly celebrated in Scottish poetry. For the last 16 miles of its course, it is the boundary between England and Scotland; and its chief tributary streams are the following: —On the right bank, or south side, in the order from its source to its termination, Manor, Quair, Etterick, Tiviot, and Till;—on the left bank, Biggar, Lyne, Peebles, Leithan, Cadon, Gala, Allan, Leader, Eden, Leet, and Adder. The Tweed has been long celebrated for its valuable salmon fishery.

2. *The Tyne*,—rises in Mid-Lothian, and runs eastward through the rich vale of East Lothian, and falls into the sea two miles north of Dunbar, carrying with it the waters of about 130 square miles of country.

3. *The Esk*, *North* and *South*, in Mid-Lothian,—the one rising in the Pentland hills, and the other in the hills of Morefoot. After running separately for 12 or 16 miles, they unite below Dalkeith; and under the common name of Esk, fall into the Frith of Forth at Musselburgh, carrying with them the waters of 128 square miles. Nothing can exceed the picturesque scenery of these two beautiful streams in the last 8 or 10 miles of their course. *Esk* is a common name for a river both in Scotland and England; it is the Gaelic word for water in general, spelt *Uisge;* hence probably the etymology, not only of Esk, but of Usk, Ouse, and Ewes, all names of rivers.

4. *Leith*,—a small river in Mid Lothian, which rises from the north side of the Pentland hills, and running north-east 16 miles, falls into the Firth of Forth at Leith. It is remarkable for giving motion to a great number of mills, there being upwards of 70 in the course of 10 miles.

5. *Almond*,—another stream, which runs chiefly between the counties of Edinburgh and Linlithgow; it falls into the Firth of Forth at Cramond, carrying with it the waters of 112 square miles. The name is Gaelic, meaning a *river* in general, and is varied into Avon and Aven, by which several British rivers are denominated.

6. *Avon*.— This streams flows for the greater part of its course between the counties of Linlithgow and Stirling, and falls into the Firth of Forth about two miles west from Borrowstounness, carrying with it the waters of about 100 square miles.

7. *Carron*, (from Car-amhain, in Gaelic, *winding stream*),—is a stream in the shire of Stirling, renowned in ancient times as the scene of contending armies, and in the present age for having on its banks the most extensive iron works in Britain; it runs for about 20 miles from west to east, and carries with it the waters of about 80 square miles into the Frith of Forth, into which it falls about four miles west of Borrowstounness. There are several streamlets of this name in Scotland.

8. *Forth*.—This is one of the most celebrated rivers in Scotland, as flowing through the finest part of the kingdom, and imparting, by its capacious frith, the benefits of navigation to the greatest number of towns. It rises from among the lakes at the foot of Ben Lomond; and after a very winding course of about 60 miles, generally to the eastward, meets the tide at Alloa. Its tributary streams are only four of any note; namely, the Bannockburn, on the south; and on the north, the Teith, which at their junction is the greater of the two; and the Allan, and Devon. It carries with it altogether the waters of 800 square miles of country. It abounds in salmon.

9. *Leven*,—a considerable stream in Fife; which, issuing from Loch Leven, runs eastward about 12 miles, and falls into the Frith of Forth, at the sea-port of Leven.

10. *Eden*,—another river in Fife, which runs through the whole length of the How of Fife, otherwise called Strath-Eden, and falls into the sea three miles north from St Andrew's, carrying with it the waters of 160 square miles.

11. *The Tay*.—This is the greatest river in Scotland, and is composed of many considerable rivers. The main stream rises on the confines of Argyllshire, 8 miles N. W. from the head of Loch Lomond; and thence running eastward through the vales of Strathfillan and Glen Dochart, falls into Loch Tay. Issuing from that lake, it continues an easterly course about 14 miles, till it is joined by the Tumel at Logierait: there, turning south, it passes by Dunkeld, (6 miles distant), and then turns to the east, and south-east, 10 miles, till it is joined by the Isla at Kinclaven. Here it takes a sudden bend, first to the W., then S. W., and lastly, to the S., for 12 miles, till it reaches Perth, through which it flows in great majesty; and thence, turning eastward, it falls into the Frith of Tay, at low-water mark, near the town of Newburgh, after a course in all of about 90 miles, and carrying with it the waters of about 2396 square miles. Its chief tributary streams are the following: On the right bank, the Brand, Almond, and Earn; on the left, the Lochy, Lyon, Tumel, and Isla;—all these composed of many other rivulets. The Tay abounds in fish, more particularly in salmon, which are chiefly sent to the London market; and the fishery rents at about 7000*l*. yearly. The tide flows within two miles of Perth; and vessels of 100 tons can sail to that town at high water. This river runs

through remarkable scenery, whether with respect to its various windings among the wood-clothed bases of the Grampians, or to its meanderings in the lower part of its course through some of the most fertile and best cultivated champaign country in Scotland.

12. *South Esk*,—the next river of any note north from Tay. It rises from a small lake called Loch Esk, in one of the most recluse recesses of the Grampians, in Angus, near to the mountain of Lochnagar, in Aberdeenshire, and runs south and east through a considerable part of Strathmore; and passing by Brechin, falls into the sea at Montrose. Its whole course is about 42 miles, and it carries with it the waters of about 295 square miles of country. Its tributary streams are the Prossin, Carrity, and Noran.

13. *North Esk*.—This rises also among the Grampians, in the county of Angus, at the head of the sequestered vale of Glenesk, or at the foot of the bounding mountains between the counties of Forfar, Kincardine, and Aberdeen, called Montbattock. After a circuitous course in the direction of east and south, and south-east, it falls into the sea three miles north from Montrose. Its whole course is about 40 miles, and it carries with it the waters of about 224 square miles. Both these Esks have very valuable salmon fisheries.

14. *The Dee*.—This is chiefly an Aberdeenshire river. Its source is 4000 feet above the level of the sea, being the highest river in the island. It rises among the mountains at the head of Braemar, and runs in a pretty steady eastern course, about 81 miles, to the sea at Aberdeen, where it delivers the waters of above 900 square miles. It is a pure limpid stream, abounding greatly in salmon and trout, and also with eels in myriads. The banks are in general richly clothed with wood; and the upper part of its course, in a narrow glen, overhung in many places with the most stupendous rocks, abounds in the most picturesque scenery. Its tributary streams are Geaullie, Guissachan, Cluny, Lui, Conny, Quiech, Yalder, Gairn, Muick, Tanar, Avon, Feuch, Canny, and Culter.

15. *The Don*.—This also rises in the mountains of Mar; and after a course of 61 miles, first E., then N. E., and lastly S. E., falls into the sea near Old Aberdeen, carrying with it the waters of 496 square miles. It abounds in salmon; and the greatest part of its course is through a thickly wooded country, much adorned with the seats of different proprietors. Its tributary streams are the Nochty, the Ernan, the Conry, the Deskry, the Bucket, the Kindy, Leochel, Ton, and lastly, the river Ury, which is equal in magnitude to half of the Don itself.

16. *Ithan*, or *Ythan*.—This river separates the district of Buchan from the rest of Aberdeenshire. It runs about 34 miles from N. W. to S. E., carrying with it the waters of about 240 square miles, into the sea at Newburgh, about 12 miles north from A-

berdeen. It has long been noted for a pearl fishery, and still affords a supply of these elegant gems.

17. *Ugie.*—This is a considerable stream in Buchan, composed of two branches, the N. and S. Ugies, which carries the waters of about 112 square miles into the sea near to Peterhead.

18. *Deveron.*—This river rises among the hills in Banffshire, and runs about 50 miles in all its turnings, chiefly from S. W. to N. E., and falls into the sea at Banff, carrying with it the waters of about 330 square miles. Its chief tributary streams are the Bogie on the right hand, and the Isla on the left. Its general course is through a beautifully-wooded country, adorned with many gentlemen's seats, and some well cultivated land.

19. *The Spey.*—This considerable river rises from Loch Spey in Badenoch, about 10 miles south from Fort-Augustus; and after a course, pretty steadily, from S. W. to N. E., of about 96 miles in all its windings, it falls into the sea about 8 miles east of Elgin, carrying with it the waters of 1300 square miles. This has often been said to be the largest river in Scotland, but can be reckoned only the third, as the Tay and the Tweed collect their waters from a greater extent of country. It is, however, liable to sudden and great inundations, and at such times may contain more water than perhaps any other river in Scotland under similar circumstances. It runs in general through the best wooded country in Scotland. The great cause of its inundations and apparent magnitude is, that it runs remarkably slow for 30 miles of its course, through the great valley of Badenoch, where it collects the waters of a very mountainous region, which are occasionally considerable; and rushing into the valley with impetuosity, covers a great extent of ground. Its source in Loch Spey is not mor than 1100 feet above the level of the sea; but it rushes with great rapidity for the last ten miles of its course. The vast forests of Abernethy, Glenmore, and Kingussie, are upon its banks, or on its tributary streams; and extend, in succession, 30 or 40 miles together, and in which is some of the finest timber in Scotland, or perhaps in Britain. There is a very valuable salmon fishery in it. Its chief tributary streams are the Nethy, Avon, Fiddich, Feshie, Tromie, Dulan, and Dulnain.

20. *The Lossie,*—a considerable stream in Moray, which, after a winding course of about 24 miles from south to north, passing by the town of Elgin, falls into the sea at Lossiemouth, carrying with it the waters of 100 square miles. It is remarkable for a species of trout, called Phinnocks, that are sometimes got 4 lib. in weight. But these are not peculiar to this river.

21. *The Findhorn,*—a very considerable river, also in Moray, which, running from S. W. to N. E. about 56 miles in all its windings, delivers the waters of about 400 square miles of country into the sea at the Bay of Findhorn. It has a considerable salmon fishery. The Gaelic name of this river being *Uisge Earn*, or the

Water of Earn, occasions the upper part of the country through which it passes to be called *Strathearn*, not to be mistaken for the Strathearn in Perthshire.

22. *The Nairn*,—a considerable Moravian stream also; which, after flowing about 30 miles in a N. E. direction, falls into the Moray Frith, near the town of Nairn, carrying with it the water of 150 square miles.

23. *The Ness*,—a very considerable river issuing from Loch Ness; and, after a short course of 6 miles, falls into the Frith of Beauly at Inverness, carrying with it the waters of nearly 850 square miles, which fall either into Loch Ness direct, or into the many streams that empty themselves into that celebrated sheet of water. There is a valuable salmon fishery in this river. With all the vast body of water that it carries along with it, it never overflows its banks, but rolls on with an equal majestic course, in a channel whose fall is only 20 inches in the mile.

24. *The Beauly*,—a considerable river in Inverness-shire, which, from the west, falls into the Frith of Beauly, carrying with it the waters of 324 square miles. It receives this name only in the last twelve miles of its winding course, as it is the aggregate of the river Glass, and other mountain torrents united into one. It abounds in salmon, and flows through a country of highly picturesque scenery.

25. *The Conan*,—a considerable river in Ross-shire; which, after an easterly course of about 38 miles, discharges the waters of about 320 square miles into the Frith of Cromarty at Dingwall. It abounds in salmon and other fish; and for the last 12 miles of its course, flows through a richly cultivated and highly embellished valley, full of gentlemen's houses and plantations.

26. *The Carron*,—a river in East Ross; which, after running in an easterly course about 30 miles in all its windings, delivers the waters of about 144 square miles into the Frith of Dornoch. There are several others of this name.

27. *Oikel*,—a very considerable stream in East Ross; which, flowing about 24 miles in an easterly course, and receiving a great augmentation of water from the north by the Shin, a Sutherland water, falls, in conjunction with the Carron, into the head of the Frith of Dornoch, contributing as its share the waters of about 300 square miles of country.

28. *Brora*,—a considerable river in Sutherland; that after flowing about 20 miles in an easterly course, and receiving the waters of the Carril, delivers into the sea at Brora, about 10 miles north from Dornoch, the waters of about 170 square miles. It abounds in salmon and other fish.

29. *Helmsdale*,—a considerable river on the east coast of Sutherland; which flowing nearly 30 miles in an easterly direction, delivers the waters of about 240 square miles into the sea, near to the Ord of Caithness.

30. *Wick*,—a river on the east coast of Caithness, which, deriving its waters from various sources, over an extent of about 100 square miles, pours them into the sea at the town of Wick.

Turning to the north coast, the first river of importance that presents itself is,

31. *Thurso*,—a considerable stream, that, after a course of about 20 miles, almost due north, delivers the waters of about 180 square miles into the sea at the town of Thurso. It abounds with excellent salmon.

32. *Forss*,—another Caithness stream, which also runs from south to north, and delivers the waters of about 80 square miles into the sea 4 miles west from Thurso.

33. *Halladale*, — a considerable stream in Sutherlandshire, which, after flowing about 16 miles due north, delivers the waters of about 100 square miles into the sea, about 12 miles west from Thurso. It has also a salmon fishery.

34. *Strathy* is another stream very similar to the preceding, but not quite so large, situated about 4 miles farther west.

35. *Naver*.—This is a very considerable mountain stream, that delivers the waters of about 200 square miles into the sea on the north coast of the shire of Sutherland, half way between Strathy head and the Whiten head. It gives name, in a limited sense, to the valley through which it flows, hence called Strathnaver; but, more extensively, the whole of the northern part of this county is, from this stream, called by that name.

36. Turning Cape Wrath to the west coast, there are a multitude of mountain torrents to be met with, but nothing that deserves the name of river, until we come to the *Water of Ew*, by Loch Ew, which being the outlet of the great Loch Mari, which is the receptacle of a multitude of collateral streams, the waters of perhaps 200 square miles are delivered through this short outlet, called the river Ew, about 4 miles in length.

37. *The Carron* is the next in point of importance. In runs about 20 miles in a S. W. direction into Loch Carron, with perhaps the waters of 80 ſquare miles.

38. *The Lochy*, which falls into Lochiel, a branch of the ſea at Fort William. This conſiderable river comprehends all the waters of the country of Lochaber. Theſe are divided into three grand branches; 1ſt, The Lochy proper, which flows from N. E. to S. W.; 2d, The *Spean*, which flows from S. E. to N. W.; and, 3d, The *Arkeig*, which flows from N. W. to S. E. Theſe two laſt meet upon the Lochy, as in a common centre; which carries the whole, under the name of the Lochy, to the ſea, from an extent altogether of 530 ſquare miles of country.

39. *The Leven*.—an Argyleſhire ſtream, collects the waters of perhaps 120 ſquare miles, which it pours into Loch Leven, and ultimately into the Linne Loch, a branch of the ſea.

40. *Awe*,—another Argyle river, which connects Loch Awe with

Loch Etive, a branch of the ſea, pours out the waters of about 250 ſquare miles, through a paſſage of 5 miles, amidst the moſt pictureſque ſcenery perhaps in Scotland. This includes the waters of the river Urchay, as well as Loch Awe. There are many pleaſant rivulets in this county, but none other that merit a particular deſcription.

41. *The Clyde* (*Cluaidh*, Ford of Fame.)—This is one of the principal rivers in Scotland, being the fourth in rank as to extent of territory, and the ſecond as to commerce. From its ſource, among the hills of Hartfell, near to Moffat, to the low-water mark in its own frith at Dunbarton, where the ſea never recedes, it is 52 miles in a ſtraight line, but including its windings, it is 72 miles in all; and it carries with it the waters of about 1200 ſquare miles of country. Its courſe is in general through a richly cultivated valley. It abounds greatly in ſalmon, and it is navigable for 16 miles of freſh water up to Glaſgow with veſſels of conſiderable burthen. The grand Forth and Clyde Canal, which connects the two moſt commercial Friths in Scotland, has been of the moſt ſignal advantage to the country. The principal tributary ſtreams are the following: On the right hand, the Medwine, the Mouſe, the two Calders, and the Kelvin; on the left hand, the Daer, Wanlock, Duneton, Douglas, Nethan, Avon, another Calder, and the Cart, beſides a multitude of ſtreamlets on either hand.

42. *The Leven*, anciently the Levenox or Lennox,—a very conſiderable river in Dunbartonſhire, being the outlet of Loch Lomond. It flows ſouthwards by Dunbarton to the Frith of Clyde, and carries to it the waters of about 400 ſquare miles of country.

43. *The Garnock*,—an Ayrſhire river, that flows to the ſouthward, falling into the ſea at Irvine, where it delivers the waters of 60 ſquare miles.

44. *Irvine*,—another Ayrſhire river, that, flowing weſtward about 24 miles, falls into the ſea alſo at the town of Irvine, where it delivers the waters of 108 ſquare miles.

45. *Ayr*,—the chief of the Ayrſhire ſtreams, flows from eaſt to weſt in a winding courſe of about 32 miles, and delivers the waters of 192 ſquare miles into the ſea at the town of Ayr. It abounds in ſalmon.

46. *Doon*,—another Ayrſhire river, carries the waters of 80 ſquare miles in a weſterly courſe, and falls into the ſea 2 miles ſouth from Ayr.

47. *Girvan*,—alſo an Ayrſhire river, that flows in a ſouth-weſterly direction about 26 miles, and delivers the waters of 96 ſquare miles into the ſea, at the town of Girvan.

48. *Stinchar*,—another Ayrſhire river in the diſtrict of Carrick, that, after flowing to the S. W. 22 miles, delivers the waters of 110 ſquare miles of country into the ſea at Balantrae.

49. *The Bladenach*,—a river in Galloway, which, after a very

circuitous courſe, chiefly from north to ſouth, about 24 miles, delivers the waters of 112 miles into the ſea near the town of Wigton.

50. *The Cree*,—a conſiderable ſtream in Galloway, which flows in a winding courſe from the hills of Carrick, ſouthwards 32 miles, through the whole county of Wigton, and delivers the waters of 216 ſquare miles into the head of Wigton Bay.

51. *The Dee*,—a beautiful ſtream in Galloway, after flowing about 44 miles in a S. E., then a S., and laſtly a S. W. direction, it delivers the waters of 336 ſquare miles into the ſea by Kirkcudbright.

52. *The Orr*, or *Urr*,—a conſiderable river in Galloway, flows in a ſoutherly direction about 26 miles, and delivers the waters of about 140 ſquare miles into the ſea, about 10 miles eaſt from Kirkcudbright.

53. *The Nith*.—This is the most considerable river in the south of Scotland, whose waters flow into the Irish Sea. It rises in Ayrshire, and runs in an easterly or south-easterly direction about 60 miles, and delivers the waters of 504 square miles into the Solway Frith, 4 miles below Dumfries. Its chief tributary streams are the Cairn, or Cluden, the Skar, Carron, and Crawick.

54. *Annan*,—a considerable river in Dumfries-shire, which flows nearly due south about 42 miles in all its curvings, and delivers the waters of 384 square miles into the Solway Frith, at the town of Annan. Its tributary streams are the Ae, or Yea, the Milk, and Dryfle.

55. *Esk*,—This is the fifth of the name in Scotland, and the largest of them all. It is situated in the eastern part of Dumfries-shire. It flows S. E., then S., and lastly S. W. about 40 miles, the last 8 of which is in Cumberland, and about 6 miles from Carlisle, or 9 from Annan. It delivers the waters of 484 square miles into the Solway Frith; of these 150 are from England. It receives the following tributary streamlets: The Ewes, the Liddal, the Tarras and Wauchope, from Scotland; and also the Lyne, a considerable English stream.

II. FRESH-WATER LAKES.

In the FIRST DISTRICT, there are no lakes of any importance.

In the SECOND DISTRICT, the following lakes occur: *St Mary's Loch* and *Loch of Lows*, both in Selkirkshire, and in the vicinity of each other. Trout, pike and eel, are found in both, and they are frequented by different kinds of water-fowl. Although they are in conjunction nearly five miles in length, they do not exceed three square miles in extent. In Dumfries-shire, there are eight or nine beautiful lakes in the vicinity of Lochmaben. It is said there are in them fifteen or sixteen kinds of fish fit for the table; among which is the *vendise*, (supposed to be the *Salmo lavaretus*), and accounted the most delicious of all fishes. There is a lake, called the *Loch of Skene*, at the head of Moffat water, which issues from this lake, over a remarkable cataract, called the Gray-mare's Tail, which was found to be 400 feet high by barometrical measurement. The whole lakes of Dumfries-shire extend to nearly ten square miles. In the shire of Kirkcudbright, there are upwards of thirty small lakes, situated chiefly among the moorlands; but there are two that merit a particular description, namely, *Loch Ken* and *Loch Dee* situated in the most fertile part of the county. They are a continuation of the same body of fresh water, in length about ten miles, and from one half to three quarters of a mile broad. They abound with pike, trout, perch, eel and salmon. The pike are uncommonly large. The head of one that weighed 57 pounds is preserved at Kenmore Castle. Even trout are sometimes caught that are eight pounds in weight. These lochs are navigable.—Another small lake, viz. *Loch Grannoch*, is remarkable for producing vast numbers of charr. The lakes in this county have been estimated at twelve and a half square miles.

In Wigtonshire the most considerable lakes are those of Mochrum and Dowalton; they are from three to four miles each in circumference, and both abound in pike, perch, trout, and eel. The two Lochs of Kennedy, lying conterminous, are fine pieces of water, with the embellishment of a small Island in each. There are a great many smaller lakes in this county, all well stored with fish, and are the haunt of multitudes of water-fowl. The whole are estimated at seven and a half square miles.

DISTRICT THIRD.—In Ayrshire, there are many small lakes, chiefly in the hilly part of the country; the principal one is *Loch Doon*, at the head of the water of Doon: it is about nine miles long and half a mile broad, encircled with a rocky shore, and abounding in fine trout. The whole lakes of this county may be included within six square miles.

In Renfrewshire, the only lake worth noticing is *Loch Whinnoch*, a beautiful sheet of water by Castle-Semple. It extends over about 500 acres in the midst of finely wooded and richly improved lands, and is well stored with pike, perch and eel, and is a great resort of swans, teal, bitterns, and other water-fowl. Two square miles comprehend all the lakes in this county.

In Lanarkshire there are no lakes of much importance. The whole are estimated to extend over three square miles.

In Dunbartonshire is included *Loch Lomond*, the largest lake in Britain, and exhibiting a great variety of beautiful and picturesque scenery. But though it lies chiefly in Dunbartonshire, a considerable part of it is in the county of Stirling, and a small part in that of Perth. It is about 30 miles long from south to north; and, at its greatest breadth, which is near the south extremity, it is eight miles; but towards the north end, for more than half of its length, it does not much exceed one mile in breadth. The whole is calculated at 32 square miles of water, exclusive of its islands, which amount to 30 in number, and some of which are of considerable size. One of them, Inchmurrin, is about two miles long, and nearly a mile broad; many of the others contain from 100 to 120 acres. They are, in general, covered with oak, yew, and other forest trees, and some of them stocked with fallow deer, particularly one belonging to the Duke of Montrose, on which are 240. The northern extremity of this loch has never been known to freeze; but the whole of the south and largest end, among the islands, freezes very readily, and if the frost be severe, and of some continuance, the ice becomes very thick. At this time, people take the opportunity to traverse it from one island to another, not only on foot, but with horses and carts; and those who are fond of skaiting have here, in the season, the finest field for that amusement in Britain. The water is of various depth, from 14 fathoms to 120, and is about five feet deeper in winter than in summer, The height above the sea at half flood, is 22 feet. The fish consist of salmon, trout, eel, perch, pike, flounder, and a fish supposed to be the *Salino lavarctius* of Linnæus, here called the pollack or powan, of the size, and somewhat of the shape, of a large herring. It is caught in vast quantities with draught nets, in the months of July and August, when it is best. This lake is frequented with vast swarms of fowl in great variety; among which may be seen, in severe winters, swans in great numbers; whilst the woods, either on the islands or surrounding mountains, attract a multitude of woodcocks every winter. This lake is surrounded on all sides by towering mountains; among which, along the margin of the water in different recesses, are several gentlemen's seats, pleasantly set down amid natural woods and plantations, and richly cultivated strips of arable land. Indeed, along the lower coast at the south extremity, by Bonhill, there is a considerable expanse of flat country as highly cultivated as any in Britain. There are several other smaller lakes in this county, but none of them of much note. The whole are estimated to extend over 40 square miles.

DISTRICT FOURTH.—The lakes in this district are chiefly limited to the counties of Fife, Kinross and Perth; there being none that merit a particular description in the counties of Stirling and Forfar, and none in Clackmannan. In Fife there is *Camilla Loch*, a small lake, being only two miles in circumference, situated in the parish of Auchtertool.—*Loch Gellie:* This lake is in the parish of Auchtertool also, and is about three miles in circumference.—*Loch Ore*, in the parish of Ballingray, is smaller than either of the preceding; and, *Loch Fitty*, somewhat larger, in the parish of Beath. There are several other small lakes in Fife, but the whole will not much exceed three square miles in extent. They are generally stored with perch. In Kinross-shire is situated that beautiful expanse of water, *Loch Leven*. It is about four miles long from east to west, and two and a half, where broadest, from north to south. It is remarkable for producing a delicious red trout of a considerable size, like to a salmon grilse;

as also the silver gray trout, in many respects esteemed to be the best of all the species. There are likewise vast numbers of eel, pike, and perch, the whole forming a valuable fishery, let at about 100*l.* a-year. Several islands are situated in this beautiful lake. On one of them is still to be seen the castle, pretty entire, in which the unfortunate Mary Queen of Scots was confined. The keys of this fortress, which were thrown into the water at the time she made her escape, were lately found in a bunch, after a severe storm, being thrown upon the shore, and are now in the possession of the magistrates of Kinross. This lake is soon to be partially drained. The chief of the Perthshire lakes are these.—*Loch Tay:* This beautiful expanse of water is situated in the middle of Breadalbane. It is 15 miles long in a bending course from S. W. to N. E., and in some places two miles broad, but more generally only one. It is in many places 100 fathoms deep. It abounds with perch, pike, eel, charr, and trout, but, above all, in most excellent salmon. These are clean at all seasons, and are in fact caught at all times by Lord Breadalbane, who has this singular privilege by his charter. This lake is partially bounded by some of the highest mountains in Britain, but has also a rich margin of natural woods and cultivated fields along its course on both sides, together with a very considerable population, and some elegant seats and mansions of native chieftains; more especially those of Lord Breadalbane, who has his antient Castle of Finlarig at the west extremity of the lake, and Taymouth at the east end, in one of the finest situations in Scotland. —*Loch Rannoch,* situated in the midst of the territory of Rannoch. It is nine miles long, and about a mile broad, surrounded with beautiful sylvan scenery; diversified with the mansion of the chieftain, and the cottages of his numerous vassals of the clan Robertson, who almost exclusively inhabit this district.—*Lochearn,* a beautiful sheet of water at the head of Strathearn, to which it gives name. It is eight miles long, and more than a mile broad. The banks are finely shaded with wood. It is not much distinguished for its fisheries.—*Erricht:* This lake is on the boundary between Perth and Inverness shires, being partly in Athol and partly in Badenoch. It is 14 miles long, and at an average about three-fourths of a mile in breadth. It is situated in the heart of a mountainous and bleak country, with hardly a human habitation in sight. Its banks, however, are enlivened with a thick stool of natural wood, among which the unfortunate Prince Charles Edward concealed himself for some time after the battle of Culloden.—*Loch Katterin:* This is situated in the upper end of Monteith, amid the most singularly picturesque scenery that fancy can well imagine. It is about 10 miles in length in all its windings, and from half a mile to 1¼ broad. It is nearly surrounded by precipitous rocky mountains, towering tier above tier, or overhanging with rocks and shrubbery the path of the astonished traveller, as he walks along the margin of the lake. It lies about 10 miles west from Callendar, whence there is a carriage way to the east extremity of the Loch, and leading to Glengyle and the head of Loch Lomond; and also along the sides of the Lakes Venachar and Achray. These two are equal in extent to Loch Katterin, and connected to it by the same stream: and as they abound in scenery of the same kind, a tour among these lakes is one of the most pleasant in Scotland.—*Chon:* This lake is situated in the upper part of Monteith, and is one of the sources of the Forth. It is about a mile and a half long, and one mile broad, and well stored with pike, trout, and eel. There is another Loch Chon, but of less dimensions, in Strathgarry in this county.—*Ard,* another Monteith lake, situated about four miles east from the foot of Ben-Lomond. It is in the heart of a mountainous country, beautifully fringed with wood, and abounds with excellent trout, eel, and pike. It is four miles long, and from half a mile to a mile broad. The main stream of the Forth has its source in this lake.—*Achray,* a beautiful lake in Monteith also, lying between Loch Katterin and Loch Venachar, and like them adorned by wood-clothed mountains. It is a mile and a half long, and half a mile broad, and abounds in a variety of fish.—*Venachar:* This is also in Monteith, and is in the vicinity of Loch Katterin, and abounds in the most picturesqe scenery. It is four miles long, and three-fourths of a mile broad.—*Voil:* This is a pretty sheet of water in Monteith, among the braes of Balquhidder. It is four miles long, and half a mile broad, surrounded with grand mountain scenery. —*Lubnaig* is situated on the N. E. side of Benledi, in the territory of Strathire, four miles long, and half a mile broad. One of the chief branches of the Teith issues from this lake.—*Loch of Monteith:* This is a beautiful sheet of water in the heart of that territory. It has two islands in it, and a peninsula, and is surrounded with beautiful scenery. It is nearly square, and about a mile and a half every way, and is fully stored with pike, perch, and eel, and remarkably large trout.—*Lydoch:* This lake is partly in Perthshire and district of Rannoch, and partly in Argyllshire. It is about six miles long and one broad, is surrounded with very high mountains, thickly skirted with wood, but without a human habitation in view.—*Tumel:* This is a beautiful lake, four miles long, and one broad, in the heart of Strath-Tumel.—*Turret:* This loch is two miles long, and three-fourths of a mile broad, situated among the mountains, five miles N. W. of Crief.—*Garrie,* a lake in Athol, four miles long, and half a mile broad, from which issues the river Garry.—*Dochart:* This lake is three miles long, and half a mile broad; is situated to the westward of Loch Tay, and forms the division between Strathfillan and Glen Dochart.—*Lyon,* a small lake about two miles and a half long, and half a mile broad, at the head of Glen Lyon, amid a wild scenery of dark high-towering mountains.—*Loch of Lows*, a beautiful piece of water in Stormount, bent like a bow, and surrounded with wood and other fine scenery. There are several other small lakes in Stormount, such as Loch Ordie, Benachally, Drumley, Loch of Cluny, &c.

DISTRICT FIFTH.—There are few lakes in this quarter of the country, and none of them of much importance in any view. In Kincardineshire, there are two on the boundary with Aberdeenshire, extending to two square miles, within the first-mentioned county. In Aberdeenshire 8 or 10 are mentioned, of which Loch *Muick*, among the mountains of Mar, is the most considerable, as it extends over about three square miles; few of the rest are nearly so large. But one of them, *Loch-na-youn*, is remarkable as lying on a ridge of Cairnton, 1000 feet from the top of that mountain, and having a small cataract of 1006 feet high issuing from it, and falling into the Dee, near its source. *Strathbeg*, on the coast, 10 miles north from Peterhead, is singular on account of its origin. About 160 years ago, a small stream that fell into the ocean had its entrance choked up by a violent easterly storm; and it has remained shut up ever since, forming a lake that covers about a square mile of country: The same stream continues to flow into it, and the waters are prevented from increasing either by evaporation, or by oozing through the sand into the sea. The whole lakes of this county are calculated at ten square miles; they are in general well stored with fish; and in one of them, *Loch le nean*, charr is to be met with; and in another, the Loch of Slains, are found a number of excellent perches, which are not known to be carried to this Loch, nor found in any other of this county.

In Banffshire, the whole lakes are estimated to extend to 2 square miles; in Elgin 7 square miles; and in Nairn 3. The only remarkable one of them all, was the *Loch of Spynie*; it is situated near the sea, and did not exceed six feet in depth anywhere; which circumstance has induced the proprietors to drain it,—a measure now nearly accomplished.

DISTRICT SIXTH.—This abounds greatly in fresh-water lakes: the principal of these on the mainland of Argyll is *Loch Awe*, situated in the territory of Argyll proper; it is about 25 miles in length, in a winding course from S. W. to N. E., and is in general about a mile broad. Towards the east end it is two and a half miles over; it is very thickly studded with small green islets, and the whole is surrounded with a highly picturesqe scenery of woods and mountains. These mountains are thickly stocked with red and fallow deer, and every other description of mountain game known in Scotland; whilst the waters teem with the most delicious fish. The salmon here are remarkably good, and the trout unrivalled perhaps in the known world, and are of all sizes up to 20 lib. in weight. A proposal has lately been made to connect this fine lake with the ocean by means of a canal.

This, it is thought could be accomplished at an expense of 10,000*l.*; the distance does not exceed eight miles from the Crinan canal, and it would open up a treasure of wealth to this sequestered country, in which the vast store of lead in its bowels, and wood on its surface, are at present locked up, from the difficulties attending land carriage.—*Loch Avich:* This is a beautiful sheet of water, connected with Loch Awe by its own tributary streamlet. "It is of a regular triangular form, 8 miles in circumference, full of trout, having one castle and several islands, the resort of gulls, cranes, water-eagles, and wild-ducks." (Statistical Account).—*Loch Eck:* This lake is situated in the Cowal division of Argyll; it is six miles long, and half a mile broad, and in some places from 60 to 70 fathoms deep. The most remarkable circumstance with regard to it is, that it abounds with pollack, which are also found in Lochlomond.—*Loch Nell:* This is a pretty little lake, in the territory of Muckearn, two miles east from the village of Oban; it abounds in salmon, trout, and eel, and is much frequented by swans, from which circumstance it derives the name. There are, perhaps, 100 other lakes in this country, but they are small and of little importance. The whole lakes in Argyll are computed to extend over 60 square miles.

Inverness-shire.—The principal lakes on the mainland of this county are the following.—*Loch Ness:* This beautiful lake is situated in the heart of the country, and is 22 miles long from S. W. to N. E. and from one to two and a half miles broad. It is in the middle from 60 to 135 fathoms deep, and even at the sides is capable almost the whole way of floating a ship of 500 tons. The wind blows always either up or down, so that the navigation is in some measure uncertain; but at the worst a vessel of 200 tons can work to windward in three days, with the precaution of anchoring at night. The scenery on each side presents, in alternate succession, as one sails along, a delightful view of woods, pastures, corn fields, rivers, and streams, with their corresponding glens, sloping verdant hills, high-towering dark mountains, and abrupt precipitous rocks.

In this great expanse of water there are salmon in considerable quantity, notwithstanding of the cruives at the mouth of the Ness, as they escape these when the water is high. Trout, the constant inhabitants of the lake, are in great plenty, and of great size, being frequently caught of the weight of from three to four pounds. This lake never freezes, and being in the line of the great Caledonian Canal, this circumstance was a great inducement to the formation of that great work, as it amounts to more than one-third of the whole distance from sea to sea.—*Loch Lochy:* This is a fine sheet of water, 16 miles long, and about a mile broad, also in the direction of the Grand Caledonian Canal; its waters flow westward to Fort William, about 8 miles distant.—*Loch Oich:* This is another lake in the direction of the Caledonian Canal; it lies between Loch Ness and Loch Lochy, five miles from the first, and three miles from the latter, and is itself about four miles long, and about one-fourth of a mile broad.—*Loch Laggon:* This lake is situated in the territory of Lochaber, about twelve miles south of Fort Augustus; it is about eight miles long, and one and a half broad, and lies in a wild romantic country, surrounded with high hills and much natural wood.—*Loch Treig*, also situated in Lochaber, *esteemed by some the most beautiful of all the Highland lakes;* about six miles in length, and, at an average, one and a quarter in breadth.—*Loch Garry:* This is about six miles long and half a mile broad, and is situated among much natural wood, about 8 miles west from Fort-Augustus. It gives name to Glengary.—*Affrick* or *Affurig*, is a lake four miles long and a mile broad, situated at the head of Strathglass, in the heart of a very wild mountainous country.—*Arkeig* is situated to the northward of Loch Lochy, into which it discharges its waters by a channel about three miles long; it is 12 miles in length, and from one to two miles broad, hemmed in on the south by high mountains, partly adorned by wood, and having in the north a small strip of tolerably fertile country, pretty thickly peopled.—*Loch Shiel* is nearly 16 miles long, and one mile broad, between the territories of Ardgowar and Moydart, in a very wild country.—*Loch Morrer*, a beautiful piece of water in the country of Morrer, nine miles long, and in many places two miles broad, having some small islands in it, and much natural wood on its banks.—*Loch Insch* is situated near the east extremity of the country of Badenoch, is about a mile square, and is remarkable for being the haunt of great flocks of swans, and other aquatic birds; it abounds also with pike, salmon, and charr.—*Loch Moy* is situated about 10 miles south-east from Inverness, is about two miles long, and one mile broad, and is remarkable for an island within it of about two acres in extent, on which is a garden planted with fruit trees, and the remains of an old mansion, surrounded with many other buildings, the ancient residence of the Lairds of Macintosh. This lake aboucs with charr and trout. These are the most remarkable of the many lakes of Inverness-shire, which are computed to extend altogether over 132 square miles.

DISTRICT SEVENTH.—In the shire of Cromarty, the only lakes worth notice are situated in the territory of Coygach on the west coast, in which there are 30 or 40. The principal are, *Shinaskink*, *Baddagyle*, and *Lurgan:* the whole lakes of this county are estimated at 10 square miles. In Ross-shire the chief lakes are the following.—*Loch Mari:* Situated near the west coast, between the territories of Gareloch and Greinard; this is a very beautiful piece of water, about 12 miles long, and from one mile to three miles broad; is full of small islands, many of them clothed with wood, as is also much of the surrounding shore.—*Fannick:* This is situated in the middle of Ross-shire, amid uninhabitable wilds and mountains; it is about seven miles long, and one mile and a half broad, and abounds in all kinds of fresh-water fish.—*Fuir*, situated among the hills of Greinard, is about four miles long, and in some places two miles broad, and contains several islands.—*Luichart*: This is a beautiful lake, situated on the Connon water, in the heart of the county; it is about four miles long, and a mile broad, and abounds in trout, some of them weighing 4 or 5 lib.: On both sides it is hemmed in by high hills covered with oak, birch, and fir, and at both extremities there are pretty extensive flats of corn land.—*Clash*, or *Glass*, in Easter Ross, at the foot of Ben-Wyves; it is about five miles long, and one mile broad, and abounds in trout; its surplus waters fall into the Frith of Cromarty. There are a multitude of smaller lakes in this county. The whole are estimated, on the mainland, at 60 square miles. In Sutherland the lakes amount to 47 square miles. The principal are these.—*Loch Shin*: This is situated near the south side of the county, about 16 miles north-west from Dornoch; it is abou 20 miles long, and in some places one mile and a half broad. It is hemmed in by ridges of high hills on both sides, which have still a skirting of shrubbery, the remains of ancient forests.—*Naver*, which gives name to Strathnaver, the greatest portion of the county, and situated near the middle of that northern territory, is about six miles long, and in some places more than two miles broad, surrounded on all sides by a wild mountainous country; but it abounds in salmon and other fish.—*Loch Loyal*, (or Loaghal), is near the north coast also, being four miles south from Tongue; it is about six miles long and one mile broad, surrounded by high mountains, until lately pastured with deer; there are many others, in general well stored with fish. In Caithness the chief lakes are, *Watten*, situated in the heart of the low country between Wick and Thurso; it is about four miles long, and a mile broad, and abounds in trout and eel.—*Calder*, situated six miles west of Thurso, is about two miles long, and one mile broad; there are several other, but smaller lakes. The whole, as stated in the 2d Section of this Chapter, extends over 10 square miles.

DISTRICT EIGHTH, The Hebrides, or Western Islands.—These islands abound greatly in fresh-water lakes, extending by computation over 104 square miles; of which, in Isla 8; Skye 10; Harris 15; Lewis 20; and the Uists 32; the remainder being situated in Mull and the smaller islets: it does not appear that they add much either to the beauty or to the value of the country. The salt-water lochs of this extensive range of territory are of most importance.

In the NINTH DISTRICT, there are many fresh-water lakes, but generally of small dimensions. The largest is the *Loch of Stennis* on the mainland of Orkney. This seems to be about six or eight miles long, and of various breadth, and turns and winds in several directions, its banks being among the best cultivated and best inhabited in the island; it is connected with the sea by a narrow strait that has a bridge of planks, under which the tide flows, and communicates a brackish taste to the water; it abounds in trout and eel, and is greatly resorted to by swans in the winter season. The whole lakes of these northern islands are estimated at 40 square miles. The total extent of Scottish lakes appears to be about 634 square miles.

III. Of Friths and Inlets of the Sea.

Scotland is remarkably indented by arms of the sea, which enter deep into the land. The extent of sea-coast on the mainland is nearly 2000 miles. Had the country been bounded regularly by straight lines, it would have little exceeded 600. This indentation is highly beneficial. It facilitates commerce, as each of these branches so far serves the purpose of a canal. It promotes the fisheries, as it brings them more within reach; and it renders the climate more temperate from the influence of the sea breeze. A short description, or rather an enumeration of these different Friths and Sea Lochs, is all that is here proposed to be given. To enter minutely into their relative circumstances, or into a description of the importance of each, would exceed our plan. Proceeding in the same tract as followed in the account of the principal rivers, the narrative shall commence with the most southerly frith on the east coast of Scotland.

1. *The Frith of Forth.*—The entrance to it between Dunbar and Fifeness is 16 miles broad. From this it stretches inland about 50 miles in a direction nearly due west, and terminates 2 miles beyond the port of Alloa, where it meets with the fresh waters of the Forth. It is of various breadths, from one mile in the interior of the county to 16 at its entrance from the sea. Indeed for the last six miles it is hardly one. The average breadth may be about seven. The extent of sea-coast, following it in all its curves, is 134 miles, and to that extent it imparts the benefits of navigation to the country in its immediate vicinity. It abounds greatly in good anchorage ground, and is well sheltered. It is of course much resorted to by shipping in stormy weather; and upwards of 600 large vessels have been seen in it at once, including 12 or 15 sail of the line. It has also become a great fishing station for herring, especially of late years; and 5000 people are sometimes employed in that fishery alone.

2. *Frith of Tay.*—The entrance between Buttonness and Tent-moor point is about 3 miles broad. From this it stretches inland, in a westerly direction, about 24 miles, till it meets the fresh waters of the Tay, a little below Perth. The breadth varies from 3 miles to one, and the average is perhaps two. Its extent of sea-coast is 56 miles. The most remarkable fishery in it is that of salmon, caught by stake nets. The navigation of this Frith is somewhat intricate, especially at the entrance, on account of sand banks.

3. *Murray Frith.*—This, in the largest sense, comprehends all the sea included between Kinnaird's Head in Buchan, and the Noss Head in Caithness, a stretch of 70 miles in breadth, tapering gradually toward the land, till it terminates in several smaller friths, about 80 miles inland in a south-westerly direction. It will be most expedient to describe it under the names of its smaller friths. One of these, being the most southerly, is also called the Murray Frith, but being understood likewise under another appellation, that shall in the present case be made use of, namely,

4. *Frith of Beauly.*—The entrance to it at Fort-George, is little more than a mile broad. It soon after expands to a breadth of 3 miles. It stretches inland about 18 miles in a S. W. direction, and has about 50 miles of sea-coast. It forms an excellent natural harbour for vessels of every description, and it is the eastern entry of the grand Caledonian Canal.

5. *Frith of Cromarty.*—This most capacious and uncommonly safe anchorage has an entry of about a mile broad, but soon expands to 4 or 5 miles in breadth, and again contracts to two miles. It extends inland nearly 20 miles in a S. W. direction, and has a sea-coast of about 45 miles.

6. *Frith of Dornoch.*—From Tarbatness in Ross, to Brora Point in Sutherland, the entry to this branch of the sea is 10 miles broad. It extends in a south-westerly direction, at nearly all this breadth, about 12 miles, when it is contracted suddenly to a breadth of little more than a mile, and then takes a westerly direction 10 miles farther, at the general breadth of one or two miles, under the name of the *Frith of Tain*. Another branch of this Frith, and on the Sutherland side, under the name of *Loch Fleet*, strikes off to the N. W. about 4 miles in length, and one mile and a half broad, with an entrance of a quarter of a mile, and forms a remarkably well-sheltered harbour. The whole coast of this frith extends to about 60 miles. There are no other land-locked bays or friths on the east coast. Turning Duncansbay-head, to the westward about 12 miles off, are,

7. *Thurso* and *Dunnet Bays* conjoined.—The entrance is from the north, 4 miles over. They expand to right and left about 4 miles inland, and have a sea-coast of about 20 miles. They form an excellent harbour against every wind except the north.

8. *Kyle of Tongue.*—The entrance to this from the north is about 3 miles in breadth; but it is greatly sheltered from that direction by several small islands. It penetrates inland 8 miles, and has a sea-coast of 18.

9. *Loch Eribol.*—The entrance from the north to this harbour, between the Whiten-head and the Far-out-head, is about 6 miles; but it soon contracts to less than 3, and is further protected by several small islands. It extends inland 9 miles, and has a sea-coast of 24.

10. *Bay of Durness.*—The entrance to this from the N. W. is

about one mile and a quarter. It extends inland 4 miles, and has about 10 miles of sea-coast. These are the chief bays or inlets of the sea on the north coast.

On the west coast, the number of them is very great. The most remarkable only shall therefore be noticed.

11. *Loch Inchard*,—about 12 miles ſouth from Cape Wrath. The entrance from the weſt is about a quarter of a mile. It expands to a mile in breadth, with a bending courſe about 4 miles inland, and has 10 miles of ſea-coaſt.

12. *Loch Laxford*,—about 4 miles more to the ſouthward; this has an entry from the N. W. about a mile broad. It expands to about 2 miles and a half within, and diverges into different branches, 5 miles inland; is remarkably well ſheltered, and has a coaſt of 18 miles.

13. *Loch Assint.*—About 8 miles farther; this loch commences with an entrance open to the weſt, of about 7 miles, but is well defended by ſeveral iſlands. It ſoon contracts to leſs than a mile in breadth, with an entrance to that contracted part, called *Kyle Scowie*, of leſs than one-eighth of a mile. This narrow part extends 5 miles and a half inland, and divides into two branches. The whole coaſt of this loch extends to 40 miles.

14. *Loch Enard.*—8 miles farther ſouth, this loch in Cromartyſhire lies open and much expoſed to the N. W.; is about 4 miles broad, and is alſo 4 miles long, and has 12 miles of ſea-coaſt.

15. *Loch Broom.*—About 6 miles ſouth from the laſt, this celebrated loch makes its appearance. It is about 12 miles broad at its entrance, but is well defended from the N. W., (to which it would otherwiſe be expoſed), by ſeven or eight conſiderable islands. It is divided into three branches. 1. *Great Loch Broom*, 16 miles in length, 5 miles at the entrance, about one mile and a half at an average in breadth, and has 40 miles of coaſt. 2. *Little Loch Broom*, 1 mile broad at the entrance, 9 miles long, and a coaſt of 20 miles. 3. *Loch Greinord*, has two entrances, one 3 miles, the other 1 mile broad, with an iſland lying between them. It penetrates 4 miles inland, and has a coaſt extending to 12 miles. This has long been, and ſtill continues an excellent fiſhing ſtation, more eſpecially for herring, which frequent it in myriads. It is remarkably well adapted for that nocturnal fiſhery, from the complete ſhelter afforded, not only by the ſurrounding mountains, but by the many iſlands already mentioned, which are inhabited by a dexterous race of fiſhermen, that have occupied the territory and inherited the occupation for ages.

16. *Loch Ew*—enters 4 miles ſouth from Loch Broom. It is 2 miles broad at entrance, expands afterwards to 3, with a conſiderable iſle to the middle, and penetrates 7 miles inland. It has 18 miles of coaſt, and is open to the N. W.

17. *Gairloch.*—This loch is ſituated 8 miles farther ſouth. It is open to the weſt; is 4 miles broad at entrance, penetrates 4 miles

inland, at an average breadth of 3 miles; and has two iſlands, and a ſea-coaſt of 12 miles.

18. *Loch Torridon.*—The entry to this loch is 5 miles in breadth. It forms three diviſions, ſeparated from each other by very narrow projecting points of land. The two innermoſt are well ſheltered, but the outermoſt is much expoſed to the weſt. Altogether this loch penetrates 11 miles inland, and has 36 miles of ſea-coaſt. It is ſituated oppoſite to the north end of the Iſle of Skye.

19. *Loch Carron.*—This loch enters 12 miles farther ſouth. The entrance is 4 miles over. For 6 miles it continues about 3 miles broad, and then diverges into two branches: *Kishorn*, three miles long, and one mile and a half broad: *Carron*, eight miles long, and one mile broad. It has 40 miles of ſea-coaſt, and is open only to the S. W.

20. *Lochalsh* and *Loch Duich*,—are ſituated oppoſite and very near to the eaſt corner of the Iſle of Skye. The entry is hardly half a mile broad. They extend inland about 10 miles; and are of the various breadths of one, two, and three miles, and have a coaſt of about 30 miles.

21. *Loch Hourn.*—This branches off about the middle of the Sound of Skye, and penetrates at various breadths of from three miles to a quarter of a mile, into the mainland of Inverneſs-ſhire, about nine miles, with a coaſt of 24.

22. *Loch Nevish*, branches alſo off the Sound of Skye, oppoſite to Armadale in Sleat. It is two miles and a half broad at the entrance, and penetrates 10 miles inland, at a various breadth of from half a mile to two miles and a half, and has a coaſt of 25.

23. *Loch Aylort*,—is four miles broad at its entrance; penetrates eight miles inland, diverging into two branches, and has 24 miles of ſhore. It is ſituated 20 miles due weſt of Fort-William, and is open to the S. W.

24. *Loch Moydart*,—is three miles broad at its entrance, penetrates inland five miles, in two different branches, which are remarkably well sheltered. It it situated to the north of Ardnamurchan Point, and is open to the west. Its shore extends to 22 miles.

25. *Loch Sunart*,—is three miles broad at its entrance, and penetrates 16 miles inland, at a varying breadth of from three miles to one-eighth of a mile. Its mouth opens to the west, but it turns and bends so much as to be nearly all sheltered from every wind. Its shores extend to 46 miles.

26. *Linnhe Loch*, and *Lochiel*.—This loch, under these two names, extends first 32 miles in a direction from S.W. to N. E. in the tract of the Caledonian Canal; and then a part of it, eight miles in length, bends at right angles in a N. W. direction. The Linnhe part of it, which is the westmost, is about four miles broad, but interspersed with several islands. The Lochiel end is from one mile and a half to two miles over. The whole having a shore

of about 86 miles in extent, communicates the benefits of navigation to a very extensive territory.

27. *Loch Leven.*—This branches off from the upper end of Linnhe Loch, to the east side, penetrating 12 miles inland. It is from one mile and a half to one-eighth of a mile broad, and has 26 miles of coast.

28. *Loch Creran,*—branches also off the Linnhe, towards the east; and penetrating eight miles inland, at a breadth varying from one mile and a half to one-eighth of a mile, and bending in different directions, is completely sheltered from all quarters. Its shores extend to 24 miles.

29. *Loch Etive,*—branches off at the mouth of the Linnhe also to the east. It penetrates in a winding course of about 20 miles; is three miles wide for two or three miles at the mouth, then contracts to a varied breadth of from one mile and a half to one-eighth of a mile. Its shores amount to 48 miles.

30. *Loch Melfort,* on the coast of Nether Lorn,—is two miles wide at the entrance; penetrates 4 miles inland: divides into branches; has about 14 miles of coast; and is land-locked on all sides, either by the mainland or by islands. Its chief openings are to the south.

31. *Craignish,*—penetrates six miles inland, and has several islands which divide it into branches. It has 15 miles of coast, and is open only to the south.

32. *Loch Swain,* in Knapdale, opens from the south by a narrow entry of less than half a mile, extends eight miles inland, and divides into branches, which are all fully sheltered. It has 28 miles of sea-coast.

33. *Loch Killisport,* also in Knapdale,—is one mile and a half broad at its entrance, extends six miles inland, has 14 miles of coast, and is open to the south by west.

34. *Loch Tarbat,* that separates Knapdale from Kintyre,—is one mile broad at entrance; continues nearly of that breadth the whole of its length, which is 14 miles; has 30 miles of coast, and is open to the south by west.

35. *The Frith of Clyde.*—This is the most capacious of all the Scottish *inland navigations,* taking it in its largest acceptation, viz. from the Mull of Kintyre inwards. It is about 50 miles long from south to north, before it turns the point at Gourock; and it carries its salt water 15 miles farther, being 65 miles in all. The distance between the Mull of Kintyre and Ireland is 16 miles. From the same point to Galloway at the mouth of Loch Ryan, the distance is 30 miles. This Frith is 30 miles broad, between the Mull of Kintyre and the nearest point of Ayrshire at Turnberry Castle, and 36 miles where broadest between Kintyre and the bottom of the Bay of Ayr. When it becomes narrow, which it does at the Isles of Bute and Cumbraes, it is there divided into two channels, one two miles in breadth, and the other little more

than one. Between Rothesay and Largs, it is about five miles broad. Between Cowal and Renfrewshire about two miles, and at Greenock three; thence it narrows gradually till it terminates in the breadth of the river, about 10 miles below Glasgow. It is however navigable to that city. Taking this frith as above defined, in all its windings, and tracing it up the different lochs in Argyllshire, it is found to have a sea-shore of 480 miles, including the coasts of the Isles of Bute, Arran and Cumbraes within its compass, to all which extent the benefits of its navigation is imparted.

36. *Lochfine*, a branch of the Frith of Clyde,—is four miles broad at its entrance, penetrates 36 miles into the interior of Argyll, by a bending course, first to the N. W., and then to the north and N. E. The breadth of the first 16 miles is about three miles and a half; of the rest it is from one mile and a half to two. The extent of its shore is 96. This is perhaps the greatest herring-fishing station in Europe. Herrings to the amount of 40,000*l.* have been caught in a season.

37. *Loch Long*, another branch of the Frith of Clyde,—is one mile and a half broad at its entrance, extends 18 miles north and N. E. through the territory of Cowal in Argyll; is from one mile and a half to half a mile broad, and has a shore of 36 miles. Near the middle of its course, a branch called *Loch Goil*, strikes off it to the N. W. in a bending course, about six miles long and one mile broad, with 13 miles of sea-shore.

38. *Loch Gare*, or the Short Loch,—strikes off the Firth of Clyde, nearly opposite to Greenock; takes a N. W. direction of about six miles. It is about from one mile and a half to half a mile broad, very narrow at the entrance, and has 13 miles of a shore.

39. *Loch Striven*.—The entrance of this is opposite to the Isle of Bute; it penetrates north into Cowal about six miles, and is from three-quarters of a mile to one quarter of a mile broad, and has 12 miles of coast.

40. *Loch Ryan*, between Carrick and the Rinns of Galloway, —s a quarter of a mile over at entrance, expands to two miles and a half in breadth, and penetrates inland 8 miles; has 18 miles of sea-shore, and is open only to the N. W.

41. *Bay of Glenluce*, in Galloway,—is 18 miles wide at entrance; extends inland 14 miles; has a sea-coast of 36 miles; is well sheltered on the west, but much exposed to the S. E.

42. *Wigton Bay*, in Galloway also,—is eight miles wide at the entrance; extends inland 14 miles, becoming gradually narrower till it ends in a point; has 40 miles of coast, and lies open to the S. E. In this bay are included some smaller recesses, the chief of which is the *Bay of Fleet*, extending nearly three miles inland.

43. *Kirkcudbright Bay*,—extends four miles inland, and is nearly through its whole length a mile and a half broad; has 1 miles of coast, and is open only to the south.

44. *Bay of Nith*,—is six miles over at the entrance; extends eight miles inland, and has 30 miles of coast; is open to the south.

45. *Solway Frith.*—Counting this to commence at Salterness Point, the S. E. corner of Galloway, it will be about eight miles over to the nearest land in Cumberland. It extends from this 22 miles inland to the east; and having a pretty irregular outline, it has 80 miles of sea-coast. Of this extent 36 miles are on the Scottish shore, including the bay of Nith, and the rest in England. It is open to the west, and is rather a troublesome navigation, as it abounds with shoals.

In the islands, the indentations formed by the furious ocean are still more remarkable and more numerous. In many places, the inlets on one side approach so near to inlets on the other side, as to give room to believe that at some future period, perhaps not far distant, they may meet, and thus make two islands of what is now only one. In all probability this has happened frequently already. The elder Pliny states the Hebrides at thirty. There are now more than double that number inhabited. His means of information, however, although the best at the time, might not be very correct; but as he states the Orkneys at 40, this should shew at least that his information in one case out of two was not far wrong, and should entitle his account to the more credit on the whole. It does not seem improbable that the range of islands called *The Long Island* might in his time have been one, as their name imports. There are still as many, even in that case, as will make up the number 30, mentioned by Pliny, although this range should have been only one then, instead of 100 at least, of which it is now composed. One thing seems to favour this notion. It appears evident from the fact, as well as consistent with the unvaried tradition of the natives, that the sea is gaining ground upon the island of Lewis. At low water, there are to be seen extensive fields of peat moss and stumps of trees, which must have composed at no very distant time, part of the land, although now covered by the sea. And if the sea be thus gaining in the present age, it is not unreasonable to believe that it may have been gaining all along. Should it have forced its way over any low-lying isthmus, the continual attrition of the waves would soon deepen the channel and widen the passage, and make a separate island of what was formerly a connected peninsula; and thus island after island might be formed. So much for the bays and salt-water lochs of the mainland of Scotland.

The following are the principal bays or ſea-lochs in the Weſtern Iſlands, which are ſo many natural harbours, ſome of them the moſt ſecure and the moſt capacious road-ſteads in the world. In Iſla, Lochindaal and Gruinort; in Jura, Loch Tarbet; in Mull, Loch Tuadh, Loch-na-Keal, Loch Scredon, Loch Buy, and Loch Spelve; in Skye, Lochs Snizort, Follart, Harport, Slapin, Eiſhart, Ainort, Slegachan and Portree; in South Uiſt, Eynort and Boiſdale; in Benbecula, Loch Uſkevagh; in North Uiſt, Loch Eport, and Loch Mady; in Harris, the two Tarbets; in Lewis, Roag, Barnera, Refort. Seaforth, Stornawa, and Loch Tua. The indentations formed by theſe and a multitude of ſmaller bays, give an extent of coaſt that is almoſt incredible. The whole of theſe iſlands extend over a ſpace equal to 2615 ſquare miles; but the extent of ſea-coaſt, as ſtated by the late Mr MacDonald, in his very able ſurvey, is not leſs than 3950 miles, which is greatly more than the whole mainland of Great Britain enjoys.

In the Orkney and Zetland Islands, the ſame circumſtances are to be remarked. The ſea every where cuts deeply into the land. It would be tedious to enumerate and more ſo to attempt to deſcribe theſe *Voes*, as they are called. It may be ſufficient to obſerve, that they contribute greatly to the welfare of the country, by the facilities they afford to commerce, to the fiſheries, and to the kelp manufacture.

IV. MINERAL WATERS.

THESE are remarkably abundant, and to be met with in almoſt every diſtrict. Thoſe that have acquired the greateſt celebrity are the following. 1. *Moffat* in Annandale. This is a ſtrong ſulphureous water, diſcovered about 180 years ago, and has been much reſorted to ever ſince. It is generally allowed to be a very effectual remedy in all ſcrofulous and ſcorbutic caſes. Moſt wonderful cures have been effected by it. It is alſo found ſerviceable for bilious and other complaints of the ſtomach and bowels; as well as for gravel and rheumatiſm. It ſparkles in the glaſs like champaign, and its gaſes are ſo apt to eſcape, that it cannot be drunk in perfection unleſs at the fountain. Its analyſis by Dr Garnet is, muriate of ſoda, 36 grains; ſulphuretted hydrogen gas, 10 cubic inches; azotic gas, 4 ditto; carbonic acid, 5 ditto. There is another mineral ſpring in the vicinity of Moffat, known by the name of the *Hartfell Spa*. Its analysis, alſo by Dr Garnet, is, ſulphate of iron, 84 grains; ſulphate of alumina, 12 grains; oxide of iron, 15 grains; azotic gas, 5 cubic inches. It is a powerful chalybeate, and poſſeſſes the ſingular property of being ſtrongeſt after heavy rains; and if taken up then, and properly corked and ſealed, may be carried to any diſtance, and will preſerve its taſte and virtues many years. It is very ſucceſsfully uſed in complaints of the breaſt, ſtomach and bowels, and in all diſeaſes peculiar to the fair ſex, and is a valuable reſtorative. It is alſo found effectual as a waſh in healing obſtinate ulcers and cutaneous eruptions.

2. *Pitcaithly* in Strathearn. The waters here have been long famed for their efficacy in curing or alleviating the ſcrofula, ſcurvy, gravel, &c. They are gentle in their operation, procure an appetite, exhilarate the ſpirits, and ſtrengthen the conſtitution. They are alſo of a cooling quality, and are uſed both in the hot and cold

bath. There is no tradition when they were diſcovered: but from time immemorial they have been much reſorted to, and continue ſtill in great repute. In the adjacent pariſh of Forgandenny, on Lord Ruthven's lands, there is a mineral spring of nearly the ſame nature. The following is an analyſis of the waters of the different wells at Pitcaithly.

Component parts.	East well.	West well.	Spout well.	Dumbarny well.	S. Park well.	
Atmospheric air,	4	4	4	4	4	Cub. inch.
Carbonic acid gas,	8	8	6	5	5	Ditto.
Carbonate of lime,	5	5½	5	5½	5	Grains.
Sulphate of lime,	5½	5	3½	3	3	Ditto.
Muriate of soda,	100	92	82	57	44	Ditto.
Muriate of lime,	180	168	146	102	34	Ditto.
Specific gravity of a gallon of each more than distilled water.	216	198	172	124	98	Ditto.

The quantity used of each was a wine gallon, or 231 cubic inches.

3. *Pannanich*, in Mar, 40 miles up from Aberdeen. The wells here were discovered to be medicinal about 50 years ago; when an old woman who had been much distressed with scrofulous sores, took a fancy to try them, and was soon completely cured. They are of a very agreeable taste, very light, and allowed to be of use in gravellish, scorbutic, and scrofulous complaints. They are situated in a romantic country by the side of the Dee, which contributes to the convalescence of the patients, from the purity of the air, and the rural beauties of the scenery. They are on the property of Mr Farquharson of Monaltrie, who has fitted up different accommodations, suited to the circumstances of the different kinds of company who frequent them. They are much resorted to in the summer season, and are understood to have been of great service to many. But they are injurious to consumptive habits.

4. *Peterhead.*—The following abridged abstract, from the interesting Statistical Account by the Rev. Dr Moir, will explain the nature and circumstances of the celebrated wells of this place. " The virtues of the mineral well have been known for above 200 years. It sparkles in a glass like champaign, and exhilarates the spirits. It has long been in deserved repute for general debility, disorders of the stomach and bowels, flatulencies and indigestions, nervous complaints, and in diseases peculiar to the fair sex: and in all these disorders, I can, from 30 years observation, affirm I know of no remedy more efficacious, when attention is paid at the same time to regimen, exercise and amuse-

ment. In most cases where the mineral water is used, the cold bath is proper, and promotes its good effects, which are an increase of appetite, strength and spirits. It is certainly taken to most advantage at the fountain, or in the room where the company assemble to drink. There is frequently a numerous genteel company here during the season, which depends very much on the weather: it commonly begins in the month of June, and terminates in August or September. There are such crowds of country people who resort to it in the month of July, that frequently the spring does not afford so much water as they would drink; and before 6 or 7 o'clock in the morning, the well is often literally dry. Great exertions have been made for the accommodation of the genteel company who resort hither on account of their health; and persons of every kind may find convenient lodgings. Two warm and two cold baths, a room where the company may assemble to drink the water, a large room for dancing, a billiard room, and other accommodations, have been erected." The following analysis of 12 lib. averdupois of its water, was given by the Rev. Dr Laing.

	Grains.		*Grains.*
Carbonate of iron - - -	3½	Sulphate of soda - - -	13¾
Muriate of iron - - -	30¼	Muriate of soda - - -	7½
Muriate of lime - - -	7	Carbonic acid gas, cubic inches - - - - - -	83¼
Silex - - - - - - - -	2		
Gypsum - - - - - - -	2		

CHAPTER II.

APPENDIX, No. I.

OBSERVATIONS ON THE STATE OF LAND-RIGHTS IN SCOTLAND,

Submitted to the Consideration of the

BOARD OF AGRICULTURE AND INTERNAL IMPROVEMENT,

BY

ROBERT BELL, Esq. Advocate, Lecturer on Conveyancing.

THE law regarding landed property, is intimately connected with the agricultural improvement of the country, and therefore an object of deep interest to the community, as well as to the landholder. Where the law of landed property stands on so broad and firm a basis as in Scotland—where the security of the proprietor is so guarded—his power over it so conducive to the support of his name and family—the facility as well as the certainty with which it may be converted into a security for money so complete—an exposition of all that relates to this subject must be highly gratifying as well as useful to the landholder, in explaining the grounds of those advantages which he enjoys, at the same time that it tends to enhance the value of his property, and to raise that value to its proper level and greatest height.

But every human institution has within it a principle of change, which constantly operates. No law can provide for all the cases that time and accident bring forth; new rules become necessary; ingenuity suggests less intricate combinations for attaining the proposed end; and thus there is a constant tendency to amelioration in all that relates to the law of private property. To support this tendency, and to give it that direction which may, within less time, or by a less circuitous route, lead to its ultimate object, is highly important, and becomes the province, and almost the duty, of that enlightened Institution to whom these views are addressed.

In presenting this subject to the reader, it seems naturally to arrange itself under the following heads.

1. Of the state of landed property in Scotland—the tenures under which it is held—and the title-deeds by which it is originally bestowed.
2. Of the power and means of conveying landed property in sale.
3. Of the power of disposal of landed property by settlement.
4. Of land as a security for debt.
5. Of leasehold property.
6. Of the provision for the clergy, and the support of the poor.
7. Of land as a source of political influence.

Under these heads, the subject admits of being viewed in a variety of interesting lights. Many things of importance will naturally suggest themselves, and the whole will give a just picture of the land-rights of the country.

SECT. I.

Of the State of Landed Property in Scotland—the Tenures under which it is held—and the Title-deeds by which it is originally given out.

Without entering into the hiſtory of the feudal ſyſtem as it affects this country, Scotland may be conſidered as a feudal kingdom, over which the King is paramount ſuperior.

The principal holding was WARDHOLDING, by which the vaſſal was bound to attend his ſuperior to the field. The moſt remarkable feature of this holding was the caſualty of ward, or the keeping of the minor heir during his minority; in conſideration of which, the ſuperior was entitled to the rents of the eſtate. This caſualty terminated, in the caſe of a male heir, on his arrival at twenty-one years of age; in the caſe of a female heir, on her arrival at the age of fourteen; and in either caſe, the ſuperior was entitled to a year's rent (relief-duty it was called) for relieving the eſtate from the hand of the ſuperior.

Another caſualty peculiar to wardholding, was that of *Marriage*. It ſeems firſt to have been due only in the caſe of female heirs; afterwards to have been extended to all caſes where the heir was paſt the age of puberty, and unmarried. It was a right to demand the *avail* or value of the fortune acquired by the heir. At one time this was rated very high; but it came latterly to be fixed at two years rent of the land. Where the ſuperior offered a huſband or wife to the heir or heireſs, and the offer was rejected, the double avail became due, which was at one time the amount of two ſingle avails, but came latterly to be eſtimated at three years rent of the eſtate. This caſualty, however, was due only where the heir was paſt the age of puberty, and unmarried, at the time of his ſucceſſion; for where the heir died before that age, or was married before the ſucceſſion opened, no caſualty of marriage was due, and it was virtually diſcharged by the ſuperior's conſent to the marriage.

Still another very intolerable caſualty attended this holding, termed *Recognition*, by which, on the ſale of more than one half of the feu, the whole, both what was ſold and what was retained, became forfeited to the ſuperior.

Theſe caſualties were all founded in the nature of the feudal connexion, and in ſome degree neceſſary for the protection of the ſuperior. The ward enabled him to bring up the heir under his own eye, and to purchaſe thoſe ſervices which the heir was unable to perform; the recognition preſerved the vaſſal in a ſituation to perform his duty to his ſuperior; and the marriage excluded an enemy from being connected with the vaſſal. But the tendency of the whole muſt have been, to render the vaſſal almoſt entirely dependent on his ſuperior; and, by ſtrengthening the union betwixt them, great facilities were thought to have been given to the two rebellions which took place during the laſt century.

The Legiſlature provided a remedy by the act 20th Geo. II. c. 50. which broke the connexion betwixt ſuperior and vaſſal; aboliſhed wardholding; and may be ſaid to have put an end to all that was truly feudal in the law of landed property in Scotland.

Where the land had formerly been held ward of the Crown or of the Prince, the holding was converted into BLANCH-HOLDING. Where it had been held ward of a ſubject-ſuperior, the holding was converted into FEU, the amount of the feu-duty being aſcertained by certain general rules laid down by the Court of Seſſion.

Feu-holding ſeems to have exiſted during all the period of the feudal ſyſtem. It was that ſpecies of holding by which a ſuperior was enabled to draw a permanent rent from his lands, or to ſecure the aid of his vassals in the cultivation of the lands that remained in his own possession. There was here the form of a feudal holding; there were certain casualties, as relief and nonentry duties; but in place of the military service due from the vassal in the military tenure, there was a payment in grain, or the performance of services, or a payment in money, or a combination of all these: in one word, it was leaseholding feudalized.

The BLANCH HOLDING is the mere shadow of the ancient holding. There is a superior and a vassal, and the casualties of nonentry and relief. But the annual return by the vassal is merely nominal; a pair of spurs, a rose, a pepper-corn, a penny Scots; and so insignificant is the return in the view of the parties, that there is commonly added *si petatur tantum*.

These holdings, the feu and blanch holding, are the only holdings of modern times;* the former comprehends originally the land that was anciently feued out by the Crown, or by a subject-superior, with all which formerly was held ward of a subject; the latter, all which had originally been given out to be held blanch of the Crown, or of a subject, or which had formerly held ward of the Crown, or of the Prince.

In those holdings that remain, nothing of the rigour of the feudal system is to be observed. The blanch-right has a duty merely nominal, in general elusory, and incapable of being demanded. The feu-right, as already noticed, is merely a lease feudalized; there being very little difference whether the payments be made to a superior or to a landlord; and the means of recovering payment of a rent or of a feu-duty, with the preferences to which the superior or landlord are entitled, being very much on a par. But these holdings are so far feudal, that they have certain casualties which require to be explained.

These casualties are—nonentry, relief, liferent-escheat, disclamation, and purpresture. The three last, indeed, may, in our present view, be struck out. *Liferent-escheat*, which is the forfeiture of the vassal's liferent in the feu, falls only on actual rebellion, where the vassal has remained year and day under denunciation, and where he is considered as civilly dead; for this is the principle of the casualty. *Disclamation*, again, is a forfeiture of the feu, as a punishment for disowning the superior. And *Purpresture* is also a forfeiture of the feu, for encroaching on the superior's property. Our writers, speaking of these two last, say, "The least colour of excuse saves the vassal;" and in modern practice, declarators, founded on them, are unknown. Thus these three casualties are entitled to no consideration.

---

* There may be ranked amongst our ancient holdings, MORTMAIN, which was of ecclesiastical origin, as where lands were given to the church for religious or charitable uses. It was in that case said to be mortified or granted *ad manum mortuam*, as the church never dies. The services of such holdings were prayers and the singing of masses. But such purposes were, on the Reformation, held to be superstitious, and the lands were annexed to the Crown. In this manner, grants to the church, to be held in mortmain, were put an end to at the Reformation; and by the practice of the present day, when lands are given for a charitable purpose, they are vested in trustees, and held either feu or blanch.

BURGAGE is also a holding known in Scotland; it is that by which burghs-royal hold of his Majesty. The vassals, in this holding, are the burgesses; and the services, watching and warding, a species of military tenure The magistrates, from whom the titles flow to the individual burgesses, act merely as the King's baillies. But this holding extends no farther than to burgage property, and scarcely deserves notice in the view we at present take of the land-holdings of the country.

The conclusion, therefore, is, that feu and blanch holding are the only holdings of modern times.

The casualties of modern holdings are, therefore, the two first mentioned above, that is, nonentry and relief. The former is that casualty which arises to the superior, through the heir of the vassal neglecting to renew the investiture after the predecessor's death. The superior, when he establishes his right to this casualty, does it by a declaratory action; and from the death of the ancestor, to the citation, the retour duties only are due. † In feu-holdings, the feu-duties and retour-duties are the same; therefore nothing more is demandable from the feu, in a declarator of nonentry, than would have been due without it previous to citation. After that, the superior is entitled to the rents of the lands; but the vassal is, by the citation, put on his guard, and may free himself from any danger through this casualty.

Relief, the other casualty, is a year's feu-duty or blanch-duty due by the heir, for relieving the land, and putting the heir in possession.

These casualties occasion no confusion in the transfer of land. In so far as they are burdens on the right, they are perfectly known, and enter into view in the transactions of parties, and cannot therefore produce any loss, or occasion any unforeseen or unknown demand on the purchaser.

By considering the situation of a small property, as affected by the rights of ſuperior and vaſſal, we ſhall bring theſe intereſts more into the view of the reader, than by any general deſcription. Suppoſe a ſmall property to have been feued out at 10*l.* Sterling of feu-duty, the rent of which is 100*l.* Sterling. The ſuperior's titles remain as formerly; no change whatever appears upon them: But the vaſſal gets a charter from the ſuperior, transferring to him the property, and ordering him to be inſeft: The vaſſal is accordingly inſeft in the lands; and thus the titles of ſuperior and vaſſal are conſtituted. The ſuperior, under his ancient titles, has the *dominium directum*

---

† When heirs are served or retoured, as it is called, to their ancestors, the brieve orders the old extent, (believed to be a valuation in the reign of Alexander III.), as well as the present value of the lands, to be ascertained by the jury: These are taken from former retours; and the present value is generally four times the amount of the valuation in the reign of Alexander. The one was called the old, the other the new extent; and it is the new extent which is understood by the term retour-duties.

tum, or ſuperiority; and he receives annually 10*l.* of feu-duty from the vaſſal. The vaſſal, on the other hand, has, under his charter and ſeiſin, the *dominium utile*, or the right of property; and he may poſſeſs the lands by himſelf or his ſervants, or let the ſame to tenants. He draws the rent of 100*l.*, or he poſſeſſes the lands, and reaps the fruit. Theſe are the ſeparate intereſts of the ſuperior and vaſſal, of which neither can be deprived by the other. When the vaſſal dies, his heir muſt go to the ſuperior, and obtain a precept of *clare conſtat*, which is an order on the ſuperior's baillie to give infeftment to the heir. On receiving this order, the heir pays 10*l.*, beſides the 10*l.* of feu-duty for the year; and the heir is infeft in virtue of the ſuperior's precept. His ſeiſin is put on record; he comes then preciſely into the place of his anceſtor, and has the ſame right to the poſſeſſion of the lands or rents that his anceſtor enjoyed. Were the heir not to enter, the ſuperior would be entitled to bring an action of declarator of nonentry againſt him; and from the death of the anceſtor, to the citation, the feu-duty would be demandable. Subſequent to citation, the real rent would fall; but as the heir has it in his power to enter, there will generally, on the citation, be an end to the action: the heir will pay his relief-duty, and take his entry.

Where, again, the ſubject is ſold, the ſuperior is entitled to a year's rent from the purchaſer. But this enters into his view in the price he offers; and neither party ſuffers any inconvenience, nor the ſlighteſt injuſtice, ſince the burden is ſettled and underſtood. The ſuperior, however, as long as the ſeller lives, can make no demand for the purchaſer's entry-money. In this ſtate of the feudal right, there is nothing formidable; the effect is little elſe than would be produced by the leaſe; the reſpective rights of ſuperior and vaſſal are perfectly fixed and aſcertained; no arbitrary or unexpected demand can be made on the vaſſal; nor is there any thing that can give to the ſuperior any power of control.

In a ſingle word, then, the only holdings of modern times are feu or blanch holding; and the caſualties which appear in practice, are, the relief of an heir, or the entry-money of a purchaſer. It is next proper to attend to the forms by which this original right in land is conſtituted.

The whole land in the kingdom holds of the Crown. But the Crown-lands have been long ſince given out, ſo that no original charter can flow from the Crown; it muſt flow, therefore, from a proprietor holding of the Crown in feu or in blanch. This proprietor gives out his land, in whole or in part, to a vaſſal, and he can give it only in feu or in blanch; for there is no other manner of holding known in the law of the preſent day. It is obvious, therefore, that he will in general give it in feu; becauſe, in this way only, can it produce an annual advantage to the ſuperior. When it is given in blanch, the ſuperior's heir is bound to enter with the Crown, in order to renew the vaſſal's rights, though he derives no emolument from his ſuperiority : A blanch-holding, therefore, will never be uſed, unleſs it be with a view to conſtitute a vote ; and even then a feu-holding, as a more ſubſtantial intereſt, will be more uſually taken.

An original charter is generally therefore granted by a ſubject-ſuperior, in the form of a feu-charter. This charter bears to be a grant by the ſuperior to the vaſſal, of certain lands, which the grantor warrants: The nature of the holding is declared; the *reddendo*, or return by the vaſſal, is expreſſed ; and an order is made on a perſon, whoſe name is left blank, as baillie in that part, to give infeftment to the vaſſal. This is the general nature of the charter by which land is given out.

The next step is, to give infeftment to the vassal, which is done in this manner. A person, as baillie of the superior, and another as attorney for the vassal, go to the ground of the lands, and with them a notary and two witnesses; the attorney is possessed of the charter, and he delivers it into the hands of the baillie, and requires him to execute the office committed to him. The baillie then delivers the charter to the notary-public, to be read and explained to him ; this the notary does in presence of the witnesses. The baillie then takes earth and stone of the grounds of the lands, and delivers them to the attorney, in the name of the vassal, as symbolical delivery of the land ; on which the attorney puts a piece of money into the hands of the notary, and says, 'I take 'instruments in your hands, of what has passed, in presence of 'these witnesses :' And this closes the ceremony, unless there be separate subjects contained in the same charter ; in which case the same ceremony is repeated on the other subjects.

This is the act of giving seisin ; and it is proved by an instrument made out by the notary, called an instrument of seisin, which states the whole proceedings, and is signed by the notary and the two witnesses present at the ceremony.

After seisin has been taken, the right is good to the receiver against the grantor and his heirs : But to render it effectual against third parties, there is one other requisite, the registration of the seisin ; and this is done by carrying the instrument, either to the provincial record, or to the general record kept at Edinburgh, which must be done within sixty days after the date of the instrument. When it is brought into the office, it is immediately entered in a minute-book, which bears, that, such a day and hour, an instrument of seisin of lands, described generally, in favour of such a person, was produced by such a one ; and this minute is signed by the keeper of the record, and by the person who gives in the seisin. It is this entry which ascertains the priority of the right ; and the seisin of a posterior date first recorded, will give a preferable right to a seisin of a prior date when subsequently recorded. The next step rests with the keeper of the record, who enters the instrument of seisin *verbatim*, in a register-book, in the precise order of the minute-book ; and on the back of the instrument a docquet is entered, and signed by the keeper of the register, bearing, that the instrument has been recorded of such a date, in such a book and leaf of the register. Thus the true and effectual registration of the instrument of seisin, must be made within sixty days after the date of the instrument, by entering the record-book in the order of the minute-book; and although the registration, or entry in the register-book, does not actually take place for some days after the entry in the minute-book, the registration receives the date of the entry in that minute-book, which is held, in law, to be the true date of registration.

This explanation of the nature of the land-rights of this country, naturally suggests a few remarks. 1. It is plain that these rights were never contrived for feudal purposes, since the most material of the feudal casualties are not taken notice of in our charters, but exist independently of them, as the necessary consequences of the rights of superiority. 2. They are consistent with the deeds of a period antecedent to the existence of the feudal law. 3. Possession was amongst the Romans the test of property; and actual possession, by turning every one off the subject, and introducing the new proprietor, was a mark of delivery; as was also the symbolical delivery, by the delivery of a rod, or of turf, or grass of the subject, to the new proprietor. The modern seisin contains evidence, that originally both real and symbolical delivery was given in this country. 4. Had the feudal system never existed, our land-rights would have been what they are at present: we should not have had the double interest in land, that of the superior, and that of the vassal; but we should have had a grant or conveyance in place of the charter, and a confirmation of that grant, by the delivery of the subject, proved by the instrument of seisin. 5. The wise policy of this country, has added to the other securities of land, the introduction of a record, in which every right in landed property appears, and every transmission of that right is entered. No absolute right of land can be effectually given without seisin, and no seisin can be effectual in a competition with other feudal rights without registration; and this system of registration has been found easy in practice, attended with beneficial or useful effects, by enabling a proprietor to pledge his land in security of lent money, and unattended by any drawback. Indeed, no precaution which secures the right in land, and gives certainty to a purchaser, thus rendering land capable of being given in pledge with perfect safety, ever can be detrimental to the right of a landed proprietor; on the contrary, by increasing the security, and extending the usefulness of that species of property, its value must necessarily be increased.

We may thus, at one glance, take into view, the conveyancing of a long period of years; we can look from the introduction of land-rights in Rome, to the land-rights of the present day; and, by one extended and comprehensive view, perceive the general nature and tendency of land-rights. This is not an object of mere curiosity, but leads directly to improvements worthy of the utmost attention.

We are not to conceive that the real delivery of the Romans, by giving to a new proprietor the sole possession of the subject, or by delivering to him a turf of the ground, or a branch of a tree, was an idle form. The Romans were addicted to ceremony in matters of law and conveyancing; but their ceremonies had meaning; and publicity, at a period before written deeds were introduced amongst them, was the obvious intention of those acts of possession.

When written deeds were introduced, the same forms and ceremonies were continued, as we learn, both from the forms for the transmission of land, and from other Roman forms: they became incorporated in their deeds, and were thus handed down to a late period. In this country it is certain that the same forms at one time prevailed.* It is equally certain, that the actual delivery came to be omitted, and the symbolical delivery only preserved. This must have led to many frauds; but written deeds, seem to have been for ages confined to grants from the Crown, and rights from the Church, while the lesser rights depended more on the evidence of the *pares curiæ*; and thus the nature of the right, joined to the ignorance of writing, prevented frauds from becoming common, until writing became more familiar, and more the medium of the ordinary transactions of the country.

When this period arrived, the seisin, on which property in land was made to rest, became a private act, which admitted of easy concealment; for, without seisin having been given, a fraudulent notary could have prepared an instrument, which, as it was not to be brought into action for a period of years, could not easily be detected; and on this private seisin, or forged instrument, the right of a fair and onerous purchaser might at any time have been defeated.

This state of matters is plainly spoken out in the statutes.†

---

* In the borough laws of Scotland, c. 56, the form of giving seisin anciently is described, "When anie man sellis his land, or any part or portion thereof, "he quha sellis sall stand within the house, and the other quha buys sall stand "without it, and sall enter in it, and the ane sall give ane penny to the provost "for his passing forth, and the other sall give a penny for his entres and sei-"sin." Ancient seisins prove the same fact.

† Thus the act 1540, c. 105, which establishes the distinction betwixt public and latent seisins, enacts, "That for eschewing of inconveniencies, that oft and "divers times happens in this realm, of the new inventit craft and falsit com-"mitted and done daily be them that sellis their lands or dispones the samine, "*ex titulo oneroso*, that puts their bairns, or other friend and person in the state "of the samine, before the date of the selling or giving them to others, as said "is." And an act passed in July 1599, and preserved in an act of sederunt the 3d of November, that year, proceeds on this narrative—"Considering the

equired a remedy; and the Legislature tried various means.
y endeavoured to distinguish betwixt public and latent sei-
the former being followed by possession for a year. They
avoured to make the notaries preserve, and produce their
ocols, (books in which all their acts were entered); they re-
ed lists of seisins from the sheriff-clerks, who were notaries
l rights from the Crown; and they called on the person re-
ng the seisin, to produce it to the sheriff. All these attempts
ineffectual. The Legislature then devised the plan of the
nt register, and it was not till after various enactments that
as established.

t first, the idea was merely that of a book, in which was
scribed all the instruments of seisin. At that period priority
ight depended on priority of seisin, provided only that the
n was recorded within sixty days. In order to be recorded,
nstruments were lodged with the keeper of the register, and
n out marked as recorded. But from indolence, or to save
expense of making the copy, they were not in many cases re-
ed; in others, the instruments lay for years in confusion and
elivered. In short, the institution had nearly fallen a sacri-
to the indolence, ignorance, and rapacity of the officers to
se care it had been committed.

ll this was remedied by the introduction of an index or mi-
-book, in which the seisin was ordered to be entered, a mi-
made of its entry, and the minute signed by the ingiver and
er of the record, (1693, c. 13). The instrument was direct-
o be recorded in the order of the minute-book; and in place
aking the right give a preference from the date of the act of
ftment, the seisin was declared to give a preference in the or-
and priority of its registration, (1693, c. 14).

'his was a most important improvement; but great and ma-
l as it was, the criminal indolence of the keepers had nearly
n destroyed the institution. In the discussion of a political
tion, where the date of registration was inquired into, it was
overed, that, with the exception of the general register kept
dinburgh, there was not a keeper of one of the registers that
rded the act in relation to the minute-book; on the contrary,
lace of making up the record from the minute-book, the mi-
-book was a mere index prepared from the record, and con-
ently the evidence of the subscription of keeper and ingiver,

---

eat hurt his Majestie's subjects sustain, and the innumerable falsits daily
ventit, be forging divers private writs, the samine being kept obscure,
hil the moyen of the trial of the falsit of them be taken away, especially
struments of seisin, &c. whilks writs being secretly keepit up, giff they be
w, to the prejudice of parties, or maliciously obscurit, gif they be false,
hill process of time, deceis of parties, witnesses, and writers, take away
l adminicles of improbation, no public records being established, quharin
l parties may find resolution of the estate of onie land quhairwith they
ein to contract," &c.

were supplied by the *ex post facto* operations of the keeper and his own clerk.

So shameful a dereliction of their duties, does not appear to have met with that punishment which the consequences of the offence deserved; but means have been since taken, to put this matter on its proper footing, and to preserve the record free from error or omission.

It were improper to have occupied the time of the reader with this explanation, were not a most useful lesson to be drawn from the history of infeftment. It is impossible not to see, that all this form had in view *publicity* alone; that, before the introduction of writing, it was necessary that this form should be striking and impressive. As long as it remained an actual delivery, the object must have been in a great degree attained. When it was proved, by the evidence of the *pares curiæ* in this country, it must also have afforded security; and it was only when the act of infeftment was reduced to writing, and attested by a notary and witnesses, that it became dangerous, and the source of much fraud; and from this degraded state it has evidently been raised, by the introduction of the record.

Publicity, therefore, has been the great object through the whole of this long course: whatever has tended to that, has secured the landholder, and wherever that has been weakened, his security has been diminished. It is not now the form of giving seisin, nor any of the ceremonies of that act, to which we can look for security: we must see, that, with all these forms, without registration, a landed proprietor would be insecure; and we must further perceive, that, from registration alone, without the act of infeftment, the same security would remain. Nay, it is undeniable, that at this moment the security rests not on the seisin, but on the registration. It is from the date of registration, that the priority of the land-right is determined. What then is the conclusion? That the act and form of infeftment is unnecessary, and not only adds nothing to the security of the landholder, but materially detracts from that security; that it is the act of registration on which alone that security rests, and on which, in law, the preference of the right depends.

Such is the conclusion to which the most superficial observer must unavoidably come; and it is that point to which the whole necessarily tends. At one extended view, we may perceive that it is *publicity* which the practice of ages has endeavoured to attain: And were the Legislature to order, in place of an instrument of seisin, that the deed on which the infeftment would have followed, should enter the record, with all the forms of the registration of seisins, and with all the effect of an act of registration of infeftment, it must be obvious, that, without losing a single advantage, our conveyancing would be freed from much expense, and even a considerable degree of danger.

The act of infeftment, like all other pieces of form, must be strictly adhered to; and it cannot be strictly adhered to without doing occasional injustice. A proprietor has paid a full price for land, and infeftment has been taken in his favour; but it has been irregularly taken: Some of the symbols of possession have been omitted; the lands have lain discontiguous, and two acts of infeftment, one on each parcel, have not been taken; or the lands have come from different superiors, or are held by different tenures, and the same omission has taken place: The witnesses have not subscribed; the number of pages has not been marked, or the notary has subscribed the last page only. Where any of these omissions have taken place, and a competition arises with another feudal right, or the adjudication of a creditor of the seller, a regard to forms, and that consistency necessary on such an occasion, will deprive the true proprietor of his right. It is surely something, to get quit of these dangers, as well as of the expense of such a mere form.

The conclusions arising out of these observations are as follows.

1. That the only holdings of the present day are feu-holdings and blanch-holdings, the casualties of which are nonentry and relief.
2. That all lands hold of the Crown, either in feu or in blanch; and the Crown-lands being exhausted, no new right can flow from his Majesty.
3. That these lands are either possessed by the Crown-vassals, or again given out by them in subinfeudation, or by a charter, to be held under the Crown vassal in feu or in blanch, but, for the reasons assigned, in feu almost exclusively.
4. That these original rights remain the rule by which the interests of superior and vassal are regulated. That on the death of the vassal, the right is renewed in the person of his heir, by the order of the superior, termed technically a precept of *Clare constat*, on which infeftment and seisin follows.
5. That every constitution of the feudal-right, is proved by the recorded instrument of seisin or infeftment; and it is from the date of the registration solely that the priority of the right is determined.

These points sufficiently explain the constitution of the original right of landed property in Scotland; and the proposed alteration, of dropping the instrument of seisin, would make the same rights in regard to both superior and vassal rest on the original charter, recorded in the same way, and with the same effect, that the instrument of seisin is at present.

The next object to be explained, is the forms under which the property in the vassal is transferred to a purchaser.

Sect. II.

Of the Power and Means of Disposal of Landed Property by Sale, if not held under the Fetters of an Entail.

The disposal of land by sale is perfectly free. The seller gives a conveyance or disposition to the purchaser, on which the purchaser is infeft, and the instrument of seisin, which is the evidence of that infeftment, goes on record: From that moment the power of the seller is at an end; his acts can no longer affect the property sold; and the purchaser's title may at any time be completed by the confirmation of the superior, to whom, on that occasion, a year's rent is payable.

This appears very simple, and from the effect of the records, very secure. But it is necessary to examine this title a little more closely, as some remarks of importance are connected with it, which cannot be properly understood without a knowledge of the history of this deed, and of the peculiarity of its form; and as they lead to a proposal which combines the most perfect simplicity with the most absolute security, the importance of the object will be some apology for the detail which it is necessary to enter upon. And, in the first place, it may be proper to distinguish betwixt subinfeudation and sale.

In the preceding section the nature of the feudal grant has been explained, by which the vassal gives out a new right, to be held by a subvassal, and by which that subvassal may in like manner constitute a new subinfeudation, and so downward, without restriction. But although there be no restriction in law, there is one in the nature of things; for, now that a vassal may sell his interest in the feu, and the superior is bound to receive the purchaser, there is not that inducement to give subinfeudations which there was at a time when the superior could not have been forced to receive a purchaser as his vassal. The only rational inducement now, is where the feu-duty can be heightened, and that will in the general case occur where the land can be employed in building; for instance, land may have been feued out for agricultural purposes at 20*l.*, being a fair rent when employed for garden-ground, or for the purposes of agriculture; but by the extension of buildings, this ground feued out as stances for houses, may give 200*l.* a year. In that case, the vassal in the original feu will give a subinfeudation to the builder, and he will acquire, by this subinfeudation, a free income of 180*l.* a-year. It is in such a situation only that subinfeudation will be resorted to; and it may be presumed, that in every other case where a vassal wishes to dispose of his right in the feu, he will do it by sale.

The reader will thus perceive there is a material distinction betwixt subinfeudation and sale. Where A feus out land to B at 20*l.*, and B subfeus to C at 200*l.*, the rights of these three parties remain permanently the same. C, the subvassal, possesses the ground, builds houses on it, or uses it as he thinks proper; and he is liable to B, who is his immediate superior, in payment of the 200*l.* of feu-duty, while B holds his right of A, and pays to him his feu-duty of 20*l.* Sterling. A is thus the mediate superior of C, and the immediate superior of B, while A holds of the Crown as paramount superior; and the rights of these three, of A, B, and C, all stand on their respective titles; A's on his original rights from the Crown; B's on the feu-charter from A, and the seisin following on it; and C's on the charter he received from B, and the seisin on it. In this manner, do these three several rights or estates, all arising out of the same land, stand on the separate titles vested in these three persons; and they descend to their heirs, or are acquired from them by purchase, or are carried to their respective creditors, without the slightest interference with each other.

But where either of these parties sells the right vested in him, it is not by subinfeudation this is done, but by sale, which has the effect of bringing the purchaser precisely into the place of the seller, and throwing the seller entirely out of the titles. Thus if C has built houses on the ground, and sells, he sells to be held of his immediate superior, that is, of B. But the consent of B is requisite to this transaction; and although the law will force B to give his sanction to this sale, it is only to be done in one of two ways, that is, either by resignation or by confirmation; and resignation is that form by which the superior can be forced to receive the purchaser, though in practice the form of confirmation is equally common. It is therefore necessary, in the *first* place, to explain what is peculiar in these two forms.

Resignation is that form by which the vassal appears, by himself or his attorney, in presence of his superior, or of the superior's commissioner, and there resigns into the hands of the superior the right he received by the original charter. It is obvious, that by this act the vassal may completely divest himself, and reinvest the superior; and accordingly there is a form of resignation, termed technically a resignation *ad remanentiam*, by which this is done, and the property transferred to the superior. But where it is intended to give the right to a purchaser, it is termed a resignation *in favorem;* the person who resigns the subject, declaring the intention of the resignation to be, not that it should remain permanently with the superior, but that it should be put into his hands, for the purpose of his again giving it out in favour of the purchaser. On this resignation, which must take place in presence of a notary, and may be proved by a notorial instrument, the superior is empowered to give a renewal of the right to the person in favour of whom the resignation is made, which he does by a deed termed a charter of resignation, which, proceeding on a narrative of the act of resignation in his hands in favour of the purchaser, gives to that purchaser the lands, &c. in the original right, to be held as in the original charter, and for payment of the original feu-duty and prestations; and it closes with an order to a baillie in that part to give infeftment in the lands to the purchaser; and infeftment on that charter makes the purchaser hold of the superior: he comes, in short, precisely into the place of the seller, and the seller is necessarily deprived of all interest in the subject.

This act of resignation is one of the means by which the superior is empowered to give out a right; and it is absolutely necessary in order to authorise the superior's charter; for, without the act of resignation, the superior would not be entitled to grant the charter; and it is a curious circumstance, that this form should have been in use in the most remote times, and before the feudal system was in existence. This very form will be found amongst those of Marculfus, a monk of Paris, who in the year 660 collected the forms that had been in use for ages before his time. A person comes into the presence of the King, resigns his lands, by delivery of a rod, and on condition that they may be returned to himself in liferent, and given on his death to a certain person. The King receives the rod, and then redelivers it to the resigner as a mark of having reinvested him; and the charter is given out in terms of the resignation. This form, which, so far from owing any thing to feudality, may be considered as introductory to the forms of that system, owed its rise to a law of that people, which punished with death any one who should attempt to reduce a royal deed and fail in the attempt. It was the security afforded by this law, that led to this peculiar form of conveyance.

The other form of conveyance, by confirmation, is of a very anomalous nature. It was introduced by no necessity; for resignation was the established and ancient form of transference. Confirmation consists in a warrant given by the seller (the vassal) to infeft the purchaser, to be held, not of the seller, but of the seller's superior. On this right the seller is infeft, but it produces no effect until it has received the sanction of the superior; until then it has the mere form of a feudal right, but wants the essence. The superior, in whose name it proceeds, has not yet given his consent; until, therefore, this right be confirmed by the superior, it produces no effect. The superior's confirmation is given in the form of a charter, which confirms and approves of the right given to the purchaser by the seller, and of the instrument of seisin which has followed on it. This is termed an entry by confirmation.

This form, so unnecessary in itself, and so unauthorised by the rights of the parties, owed its origin to the act of Robert I. st. 2. c. 24. § 2. which declares, that " it shall be leisome to anie " freeman to sell his lands at his own pleasure and will, so tha

" the buyer of the land shall hold the same contained in his in-
" feftments immediately of him who is overlord to the seller of
" the land, for the same services and duties as the maker of the
" infeftment and alienation did hold them before the making
" thereof." This Scotch act is a mere transcript of the English statute, *Quia emptores terrarum*, which produced so remarkable a change on English conveyancing. From the date of that statute, there has been no original grant of land; and where a proprietor sells, the effect of this statute is to make the purchaser instantly hold of the overlord.

In this country the same effect ought to have been produced; but Scotch statutes do not seem to have received the same degree of respect that statutes received in England. It is clear, however, that it produced the charter of confirmation, which is to be explained in no other manner. This statute entitles a proprietor to sell, provided the lands are declared to be held of the person who is overlord of the seller, for the same services and duties, &c. The seller in this charter, sells to be held of his superior, by the same holding, and for payment of the same duties, the seller pays. So far the deed follows the statute. But the effect produced in England and Scotland has been very different: in England, the statute makes the purchaser hold of the seller's superior, without any act on the part of the superior. Thus Blackstone says, that all manors are held to have existed prior to this statute; and Wood's Theory of Conveyancing observes,
" that formerly the holding was of the seller and his heirs, and
" not of the superior. Subsequent to the act, the holding has
" been of the lord of the fee, by the service under which the sel-
" ler held." He observes farther, that even the manner of holding is now omitted in deeds of sale, and there is no notice taken of the superior's interest in the fee. The same ought to have taken place here; for the statute says, " That if anie man sells
" and dispones anie part or portion of the lands or tenements,
" the buyer, who is infeft, shall hold the same of the immediate
" overlord." But notwithstanding this express enactment, no such effect was produced, nor did the purchaser hold of the seller's superior, until the superior gave his assent by the charter of confirmation. So differently have the proceedings in the two countries been, though clearly originating in a statute expressed in the very same terms.

Having now explained the forms by which the superior and vassal unite in admitting a purchaser into the place of the vassal, it may be proper to explain very shortly the history of the disposition of sale; for at one time the transference of land was attended with dangers which have been gradually overcome; but which have given a peculiarity to the form of the deed by which the sale is at this moment accomplished.

A charter not followed by infeftment during the lifetime of the grantor, was not reckoned binding on the heir of the grantor, and he could not have been compelled to renew the precept for infefting the receiver: at that time, too, the precept, as a mandate, fell by the death of the grantor. A prior latent seisin would have destroyed a posterior seisin, and the consent of the superior was necessary to secure the purchaser against the rights of the superior. These difficulties prevented the purchaser from paying in safety; and thus a mutual contract became necessary for both parties. The purchaser, on the one hand, became bound to pay the price; and, on the other, the seller bound himself to grant a charter *a se de superiore suo*, and containing a procuratory of resignation and a precept of seisin, on which the purchaser might transact with the superior, and obtain a title, either by resignation or by confirmation. The seller at the same time gave a charter *de se*, on which infeftment followed, which conveyed the property to the purchaser; and he afterwards completing his title under the superior, as he could not hold the subjec under the seller and at the same time under the seller's superio the right under the seller's superior, as the principal right, wa held to absorb the other; and thus the purchaser's title was completed, and the purchaser brought into the place of the seller.

At this time there was an immense load of forms. There wa the mutual contract,—the charter *a se*, with the precept of seisi and the charter *de se*, with the precept;—there was an insrume of seisin on the last of these charters, and there was either a se sin on the charter *a se*, with a charter of confirmation by t superior, or a charter of resignation with an infeftment on In this way there were no less than seven separate deeds requ ed to transfer land to a purchaser; and how the commerce land was able to exist under such a load, it is not easy to concei

Theſe forms gradually run together, and the progreſs is extrem intereſting. The latent ſeiſin was the moſt dangerous evil a p chaſer had to fear; and this was in ſome degree removed by the 1540, c. 105, which created a preference in favour of a ſeiſin which poſſeſſion had followed for a year; and the eſtabliſhmen the records completed the ſecurity, the foundations of which been laid by that ſtatute. The entry with the ſuperior was fa tated by the act 1469, c. 37, which entitled every appriſer to tain an entry from the ſuperior on payment of a year's rent; whenever a purchaſer found any difficulty, he obtained a truſt-b from the ſeller, on which he led an appriſing, and obtained that try from the ſuperior in the character of appriſer, which he had fuſed to him as a purchaſer; and from that time the entry with ſuperior was rendered much eaſier; but it introduced the pra of paying a year's rent to the ſuperior on the entry of a purchaſ

In this way the ſituation of a purchaſer was ſo far relieved, he was enabled to pay the price; and the deed of ſale, in plac a mutual contract, became an unilateral deed. Another impro ment aroſe from this, that, in place of the two charters, the diſpoſition contained an obligation to infeft the purchaſer, to be held *a ſe vel de ſe*, with a procuratory and precept. But it was not merely the leſſening the number of deeds that was accompliſhed by this change: a much more important alteration aroſe in this way, that thereby one precept came to anſwer both purpoſes; for men of buſineſs, by not declaring the object of the infeftment in the precept or in the inſtrument of ſeiſin itſelf, imagined that the indefinite infeftment might ſerve as an infeftment to be held of the ſeller, or of the ſeller's ſuperior, according to circumſtances; for as the purchaſer had a conveyance from the ſeller, with an obligation to infeft him either *a ſe* or *de ſe*, or both, and an infeftment was taken in his favour, which might be underſtood, from its indefinite nature, to apply to either holding, it appeared capable of being conſtrued in the manner moſt beneficial for him; and accordingly the Court approved of the idea, and ſupported the indefinite ſeiſin as a public or a baſe one, according to circumſtances; nay, after being held as a baſe right, it admits of being confirmed as a public ſeiſin, without loſing its effect as a baſe right: July 15. 1680, Biſhop of Aberdeen, Stair. In other words, from the moment ſeiſin follows on the indefinite precept, the ſeller is diveſted of his property, and the purchaſer is ſecure againſt his acts and the diligence of his creditors; and at any time afterwards the confirmation of the ſuperior brings the purchaſer to hold of that ſuperior, and places the purchaſer in every reſpect in the place of the ſeller, with all the rights and privileges he formerly enjoyed; annulling, of courſe, all rights formerly exiſting in the ſeller, who from thenceforth has no more connexion with the property than any ſtranger has.

Theſe improvements were completed, by the full eſtabliſhment of the records;—by the act 1695, c. 35, which allowed procuratories and precepts to remain effectual after the death of the grantor and receiver;—and by the 20th Geo. II. which ordains the ſuperior to receive the purchaſer.

The common disposition of sale is therefore not a simple deed, conveying the property from the seller to the purchaser; there is a third party who has an interest, and that is the superior of the seller, who, in Scotch conveyancing, must signify his consent, in order to transfer the right from the seller to the purchaser.

There is in reality by Scotch forms two estates constituted, one held by the purchaser, of the seller, and another by the purchaser, of the seller's superior. The one is subordinate to the other. The inferior right carries the use of the land, the other the superiority of that estate; and by thus separating the property and superiority, a variety of little forms are required to consolidate and again unite them, the neglect of which will be attended with very serious consequences, and a due attention to which, forms the more delicate and intricate parts of the conveyancer's duty.

An example will give a better illustration of the rights thus arising, than can be done by a mere statement of the abstract principle. Thus, in 1653, the Earl of Dundonald conveyed certain lands to his son Lord William Cochrane, who was infeft on the precept in the disposition. Lord William died, and the Earl, by a new deed, conveyed the same lands to a son of Lord William's: This son completed his title on the second conveyance from the Earl of Dundonald; and it became the foundation of the titles of the future Earls down to 1725, when the Earl at that time in possession made a settlement, excluding the heir-male of the old investiture, and calling in a stranger. The heir-male now inquired into the titles of the estate; and he found that the right given to Lord William in 1653, at the distance of seventy-two years, had conferred upon him a right to the property which had been entirely overlooked, and that the right retained by the Earl was nothing more than the right of superiority of the base estate given to Lord William, so that the titles had been erroneously made up during the whole of that period, and were capable of carrying this superiority only; and that being proved, the Earl by whom the settlement had been made, was found to have no good title to the property of the estate, and his settlement to that extent was set aside.

A variety of instances might be imagined where the same consequences would arise. Thus, were a purchaser to be infeft on the precept in the seller's disposition, and afterwards, in place of obtaining a confirmation of that right from the seller's superior, were he to resign in the superior's hand, and to take a charter of resignation on which he were to be infeft, the purchaser is understood to have separated the property and superiority; and if he chanced to die without having united the two estates by a resignation of the property in his own hands *ad remanentiam*, and should his heir complete his title to the estate as held by his ancestor of the seller's superior, the titles of that heir, and of all the subsequent heirs, would carry the superiority only; the property would remain *in hæreditate jacente* of the purchaser.

These are consequences highly interesting to every Scotch proprietor. What Scotch gentleman is there, at this moment, who can say with certainty, that the property of his estate may not at some former period have been carried off by a base infeftment on a contract of marriage hitherto overlooked, and which may have placed that property *in hæreditate jacente* of some former heir?—or can he be certain, that, in the political contests in which his ancestors have been engaged, the consequences of splitting the property and superiority have not been forgotten in completing the subsequent titles to the estate? It is in these considerations an apology will be found for the history which has been given of the disposition of sale, since it explains the cause of the evil, at the same time that it suggests a radical and certain cure, and shows how congenial such a cure would be with the changes and improvements which have constantly been going on in this very important department of practice.

The evil arises obviously from the double manner of holding, and the division of the estate into property and superiority; a division which has been the consequence of requiring from the seller's superior, an act approbatory of the estate being held of him: While in England this has been attained by the statute *Quia emptores terrarum*, which serves as an universal and perpetual confirmation of all sales to be held of the seller's superior. This affords us a complete practical lesson, and shows, that had the practice of this country given the same effect to the statute of Robert I. (which is a mere repetition of the English statute *Quia emptores*), that in England was given to that statute, the same consequences would have followed, and infeftment on a disposition to be held of the seller's superior would, without further form, or the consent of the superior, have carried the lands to be held of that superior, in the same way they are at present by his act of confirmation, or by his charter of resignation; and by that means, not only would these forms have been rendered unnecessary, but the separation of property and superiority, which may be attended with such embarrassing and often dangerous consequences, would never have taken place.

The remedy then is extremely simple. We require no new statute, but to give effect only to an old one; we produce no new or untried effects, but those only which are produced at present by clumsy and expensive forms. This is not a change of form, but a diminution of them; a running together of forms only, to concentrate their powers. It is a means of securing all the advantages of several forms, without the risk and expense to which the landed proprietor has hitherto been exposed;* and were it necessary to defend a proposal so plain and obviously inoffensive, the practice of England might justly be referred to, where the consequences this plan may produce have been fairly tried, and found to be peculiarly favourable to the commerce of land.

It is natural, in the close of this subject, to reflect how much an interchange of practices would improve the land-rights of both countries, and how easily they might be assimilated to each other. Were we to lay aside the instrument of seisin, and in place of that form, to require the registration of the original conveyance, and were that conveyance (when given to be held of the seller's superior) to produce the effect that is produced in England by a similar deed; our transferrence of land would possess all the simplicity that can be given to the commerce of land, and all the security which human ingenuity exercised on that subject has hitherto been able to invent: While in England, by the introduction of the Scotch system of records, that security would be given which other devices may to a certain degree secure, but which, without such a plan, they cannot possess in the same extent that is enjoyed in Scotland: And, what perhaps would be of no small importance to both countries, the form of transferring landed property would be almost completely the same in both. *

---

* Dr Smith, in deducing the progress of language, has a remark peculiarly applicable to the present subject. "All machines (he observes) are generally, "when first invented, extremely complex in their principles; and there is often "a particular principle of motion for every particular movement which it is "intended they should perform. Succeeding improvers observe, that one principle may be so applied as to produce several of these movements; and thus "the machine becomes gradually more and more simple, and produces its effects with fewer wheels and fewer principles of motion."

SECT. III.

Of the Power of Disposal of Landed Property in Scotland by Settlement.

That every man has the entire disposal of his own property, *quisque est rei suæ moderator et arbiter*, is a principle received in the law of Scotland. This power, when extended to the right of naming an heir, is perfectly consistent with the highest and truest notions of property: but, carried the length of authorising the proprietor of the present day to prescribe a line of succession that may continue for ages, or to take the estate from under the law of the land, and to prescribe new and peculiar laws, for the succession and use of the estate, is to make the law of property destroy itself; since in so far as the property of the present proprietor is carried beyond his own natural life, the property in his successor is to that extent lessened. The power of entailing is not therefore so much an enlargement of the powers of the proprietor, as an exchange of rights; it is truly the delivering up of the just rights of the future proprietor to the pride and caprice of the present one, contrary to all sound principle of law, and equally repugnant to the rules of expediency and of substantial justice.

The power of entailing land, gives rise to a question of great national importance, and involving a variety of considerations unfit for the present occasion, though it is impossible to overlook entirely its effects on the public, as well as on the individual. The proprietor of an entailed estate, being a mere liferenter, is deprived of the means, and in a great measure of all motive for the improvement of his estate. As a liferenter, his means are necessarily narrowed; and, burdened (on his entry) by the provisions made for the widow and children of the former proprietor, his powers are still further narrowed. A proprietor so situated, and prohibited to give long leases, must be incapacitated from attempting any of the more important improvements, such as draining or enclosing, and equally incapable of enabling his tenant to undertake such operations. The effect of this, on the productive powers of the estate, and the general improvement of the country, must be very obvious; and in so far, the interest of the community is concerned. But, thus entangled by the fetters of his entail, the heir in possession is unable to support the appearance of a great proprietor, and at the same time to provide for the establishment of his family. The effect of this on the female branches of the family must be peculiarly severe. Bred up with ideas inseparable from the style in which they have lived, their situation, when reduced to the mere pittance the entailed estate can afford, must necessarily produce scenes of the deepest domestic misery.

---

* In closing the subject of Sale, it may not be improper to bring into view those points in which the defence afforded by the records is rather defective. As, 1. In the case of the litigiosity of the inhibition and adjudication; 2. The plea of deathbed reaches a purchaser; 3. So also does the fraud or forgery of the author; 4. A disposition by an heir within a year from the death of the ancestor may be reduced by the creditors of the ancestor; 5. The want of value in a conveyance to a conjunct or confident person; 6. The legal provisions of terce or courtesy; and, lastly, Servitudes: None of all which are discoverable from the records; and a right of reversion that has been recorded, may at any time be enforced. These are all points worthy of attention.

But without enlarging on these, it seems proper to be observed, that the statutory entail is connected with feelings and interests in the landed proprietor, which are likely, in his mind, to overbalance all the bad consequences of this form of settlement. Thus, the entail binds property to rank; and in this (while restrained within proper bounds) seems to lie the only merit it can possess in a monarchical government. It gratifies the pride of a proprietor, to be able to preserve and to hand down his name through a long line of succession; and, as it encroaches on the commerce of land, it enhances its value.

These consequences call in a particular manner for a liberal and impartial examination of the subject from the landed proprietor, and for a jealous scrutiny, by the monied and mercantile interest of the country. The effect, indeed, of a form which, in all the stages of its progress, has been detrimental to the public interest, as well as inconsistent with domestic happiness, and which in the last stages of its career (to which it is fast approaching) may be attended with more serious and aggravated evils, is an object of importance to all the orders of the state.

The principal on which the power of entailing has been made to depend, is the veſting in the heir in poſſeſſion, a limited right of property. This is done by declaring certain acts to create an irritancy of his right, and at the ſame time by invalidating the act; for, were either of theſe left entire, the heir in poſſeſſion might be deprived of his eſtate. Thus, if the act (the contracting of debt, for inſtance) were not declared to be void, it would affect the eſtate; and were the heir's right to the eſtate not to be put an end to by doing the prohibited act, the creditor would be enabled to affect and carry off the eſtate; but by annulling the deed, and declaring the heir's right to be at an end, the eſtate is preſerved unaffected by theſe prohibited acts, and tranſmitted to the next heir in the deſtination. Technically ſpeaking, the clauſes by which theſe effects are produced, are termed *irritant* and *reſolutive* clauſes; the *irritant* clauſe putting an end to the deed executed contrary to the prohibition; and the *reſolutive* clauſe reſolving or putting an end to the right of the heir contravening.

It is by theſe reſtrictions, that the right of property in the heir in poſſeſſion is ſo much narrowed, that his acts and deeds do not affect the eſtate, and, on any act of contravention, tranſmit it to the next in ſucceſſion. This principle was recogniſed and acted on previous to the act 1685, by which entails were authoriſed, or rather by which their form, and the means of their publication are provided for.

By that ſtatute, it is provided, that entails intended to prohibit the contracting of debt, the ſale of the eſtate, or the defeat of the deſtination, muſt have irritant and reſolutive clauſes, and be inſerted in the record of tailzies, as well as eſtabliſhed by infeſtment properly recorded. Theſe are the forms by which the entail is rendered effectual, and capable of attaining the objects of the deed; and they are ſuch as to give full intimation to the public of the nature of the right.

By observing these forms, a proprietor has power to point out a line of succession that may endure for ages,—to make these heirs bear his name and arms,—to prohibit them from selling, from contracting debt, or from altering the order of succession: He can exempt the estate from claims of terce or courtesy, and in their place prescribe the extent of the provisions which wives or husbands of heirs shall enjoy, and fix the sums to be ſet apart for the younger children of those who may succeed under the entail.*

---

* The entail is a deed of that nature, that it seems almost wrong to propose any alleviation of its evils. But as it may, to a certain extent, be considered as a form necessary for supporting the nobility and great families of the country, the following proposal is submitted, as a means of providing for the wives and children of the heirs in possession, and at the same time securing capital for the improvement of the estate.

It is usual in the entail to permit the heir in possession to secure a jointure to his widow, of one third of the rent, and three years rent of the estate as a provision for the younger children; provisions which, when they take effect, must incumber an heir of entail (who is, in fact, nothing else than a liferenter) in a manner that must preclude him from supporting the honour of the family he represents, or must inevitably sink him in debt. For instance, suppose the estate to yield a free rent of 1000*l.* Sterling; 330*l.* of this goes to the widow of the last proprietor; and his children draw 3000*l.*; which, in most entails, is ordered to be paid off within a certain period. Let us see, then, in what situation the heir of entail will be placed by the pressure of this burden. It seems scarcely possible to set apart a sinking fund of more than 300*l.* a-year for answering the children's provisions; and even this will require to operate for fifteen years before the provisions be discharged. If the widow lives so long, or at least during her life, there will be a burden of 630*l.* on the estate, leaving a

But without going the length of the ſtatutory entail, a proprietor may prohibit his heir from ſelling or contracting debt, or altering the order of ſucceſſion. It is true theſe conditions will not ſecure the ſubſequent heirs againſt onerous tranſactions with third parties; but the heir diſregarding theſe conditions, muſt indemnify the ſub-

---

residue for the heir of 370*l.*; from which, after deducting arrears and expenses of management, he has to support an appearance befitting the heir of the family, and the proprietor of an estate of a thousand a-year; a situation certainly very inconsistent with the object of a deed which is intended to perpetuate the name and family of the grantor, and which therefore ought to induce the conveyancer, as well as the grantor of an entail, to inquire seriously whether it be possible to arrange the conditions in such a manner as to provide for the widow and children of the heir in possession, without throwing on the next heir a burden so intolerable as that which seems to be the necessary result of the plan at present universally followed.

In searching for this remedy, it certainly is matter of surprise, now that the effect of a sinking fund is so well understood, and the means of accomplishing the object through the medium of the national funds, so easy and certain, that it never has been brought in aid of the entail, and introduced as a method of securing a fund of provision for the widows and children of heirs of entail.

When a sum of money is annually set apart for consituting a fund, the interest of each year's payment accumulates and bears interest; the effect of this accumulation becomes every year more apparent as the scheme advances; and in the end it increases the fund with wonderful rapidity. When, on the other hand, the annual sum is applied to extinguish a debt already contracted, we not only lose the effect of the accumulation of the interest, but the interest of the debt already existing runs against the fund, and the estate must contribute not only the principal of the debt, but all the interest that arises on that principal betwixt the period of contracting the debt and the final extinction of it.

For instance, let us take the case of an estate of 1000*l.* a year, burdened with 3000*l.* of provisions, and let us suppose that 300*l.* a year is set apart for extinguishing this debt; it is obvious, that in ten years time 3000*l.* will have been set apart; but as it requires fifteen years to extinguish the debt, it is equally obvious that the heir in possession must have paid 1500*l.* of interest in the course of clearing the debt; if then this annual payment be constantly improved for the period of fifteen years before it be wanted, the consequence will be, that in place of producing 3000*l.* upwards of 7000*l.* will be produced. Such is the effect of the accumulation of interest, which here acts in a double ratio, from the contrary tendency of the two plans.

The establishment of a sinking fund, where the annual savings were regularly improved by purchasing stock, would therefore greatly relieve the burdens on heirs of entail, arising from the necessity of providing for the widows and children of the heirs in possession. Suppose, for instance, the saving of 7000*l.* Sterling to be applied to these purposes; it arises, it will be observed, from a fund which, by the plan commonly followed, is barely sufficient to pay 3000*l.* to the younger children: Whereas, if 3000*l.* be sufficient to purchase a jointure of 300*l.* to the widow, the effect of the accumulation will be to provide for the widow, while at the same time 4000*l.* in place of 3000*l.* is secured to the children. In this view, therefore, the heir of entail would constantly have an income of 700*l.* a year, while provisions were made for his widow and children; in place of being restricted, for years, (as must happen on the other plan), to the slender provision of 360*l.* which, with the drawbacks that must accompany it, will unavoidably throw the heir into obscurity; besides that a further advantage might be attained by the accumulations in the course of a minority.

But this plan seems to be attended with another advantage. As things are ſequent heirs for whatever acts of contravention he may commit; that is to ſay, if he gives away gratuitouſly, his deed may be reduced, and he may be forced to re-employ the price where he ſells: The eſtate may however be attached by the creditors of the heir.

A ſtill ſimpler form of deed may be choſen, where the proprietor names a ſeries of heirs, but neither prohibits the heir in poſſeſſion from altering that deſtination, nor from ſelling or contracting debt; and under a deed of this kind those called to ſucceed have nothing more than a mere *spes successionis*, without any means of ſecuring their right, or of indemnifying themſelves, ſhould the eſtate be diſpoſed of or deſtined to a different line of heirs.

It is thus obvious, that in Scotland a proprietor of land poſſeſſes the moſt extenſive power in the diſpoſal of his property. But this power is taken away while he is on deathbed, that he may be freed from the importunity of thoſe who in his laſt moments might take advantage of the ſtate of weakneſs to which he is reduced. No ſettlement, therefore, to the prejudice of the heir-at-law can be executed on deathbed; and where the grantor is unwell at the time of executing the deed, he muſt either have been ſo far recovered as to have been able to go unſupported to kirk and market, or he muſt have ſurvived its date ſixty days, in order to give it validity.

It may be proper to take notice of another peculiarity in Scotch conveyancing. A proprietor, in ſettling his ſucceſſion, cannot, after the manner of the Romans, ſay, "I appoint B to be my heir." The nomination of an heir, or the disheriſon of an heir, is not conſiſtent with the principles of the law of Scotland. It is not by the form of nominating an heir that land is transferred, it is by naming a diſponee; it is in the character of diſponee, and under the form of confirmation by the ſuperior, or by a reſignation *in favorem*, that the heir comes into the place of the anceſtor.

In England, land is deviſed by teſtament; but in Scotland, it is paſſed only by a diſpoſition; and this has created much confuſion in the diſpoſal of landed property in Scotland, by Scotchmen in the Eaſt or Weſt Indies, where the forms of the law of England prevail, and the rules of the law of Scotland are little known or attended to. The remedy is ſo ſimple, that the margin of a publica-

---

managed at present, an heir succeeding to an entailed estate, and burdened with provisions to the widow and children of the preceding heir, is completely incapacited from improving the estate. Now, if we suppose the jointure to the widow to be purchased from the heir of entail, and the 3000*l*. to be laid out in improvements, under the control of the Judge Ordinary, those very situations which at present are the most unfavourable for improving an estate of that description, will become the source of permanent improvements, which will enable the heir of entail to pay off the jointure, without imposing on him any very formidable burden, or one which will not be fully compensated by the increased permanent rent which the estate will be made to yield.

Another plan might be, to ordain the heirs of entail to plant a certain part of the estate, and to cut the wood at a certain period, for the use of the younger children; or the object might be attained by a combination of the two plans.

tion which may circulate in England or the colonies, cannot be miſapplied, by giving place to a form that will prevent the evil. *

This will give a ſufficient explanation of the power of diſpoſal of landed property by ſettlement. What relates to the power of entailing is of deep importance, both to the public and to the individual; it is a ſubject of extreme delicacy, and intereſting in a very high degree, from the period at which it comes forward. It ſtands at preſent in a ſituation where its effects have become viſible; when its operation on the private intereſts of individuals may be fully anticipated; and, the poſſibility of the commerce of land in this country being completely obſtructed, muſt be in the full contemplation of the obſerver. At preſent the remedy may be provided, and have ſo gradual an operation, as to produce its full benefit without injury or inconveniency; whereas, by delay, matters may become unmanageable, and the remedy produce a violent and dangerous effect on both the landed and monied intereſt of the country.

SECT. IV.

Of Land as a Security for Debt.

Land may become a security for debt, either voluntarily, by the deed of the party; or involuntarily, by the act of the law.

OF THE VOLUNTARY SECURITY.

Land becomes voluntarily a security for debt by the deed of the proprietor, where, for borrowed money, an heritable security is given over the property. The form of this security has undergone a considerable change. Anciently, while the lending of money at interest was prohibited, various devices were fallen upon to evade the law;—rents of land were purchased on what were denominated annualrent-rights;—or wadsets were acquired, which were provisional exchanges of land for money, by which the proprietor gave the use of his land for the use of the money;—the lender was called the wadsetter, and the borrower or proprietor of the land, the reverser, because he had the right of reversion, or of reclaiming the land on repayment of the loan.

---

* *Form of a Disposition of Land in Scotland.*

I, A, do hereby GIVE, GRANT, and DISPONE, to B, his heirs and assignees whomsoever, all lands and heritages in Scotland, presently belonging, or which may belong to me at the time of my death. In which lands and others I bind and oblige me and my heirs to infeft the said B, by a double manner of holding, *a me vel de me*, and to grant all deeds necessary; reserving my own liferent, and a power to alter at any time of my life; and I dispense with the delivery hereof, and declare the same to be effectual, though found lying by me undelivered at the time of my death. *(If the grantor means to burden his disponee with legacies, he may do it here, in these terms:)* Burdening always the said B. with such legacies as I may at any time appoint; and in particular, with the following sums, payable the first Whitsunday or Martinmas after my death, viz. to C, the sum of ——— &c. In witness whereof, I have written and subscribed ‡ these presents at —————, the ——— day of ——— One thousand eight hundred and ——— years, before these witnesses, E. and F. *(describe them)*.

The two witnesses subscribe
on this side, each adding the
word *witness* after his name.

The grantor subscribes here.

‡ *If the grantor does not write the deed with his own hand, this part will run in these terms: " I have subscribed these presents, written by D.* (describe him) at ———

The wadset has almost entirely disappeared from practice, and the annualrent-right totally so; indeed, such a form as that of the annualrent-right could not stand in competition with the heritable bond, which gave not only an annualrent-right, but a right in security of the principal sum, as well as of the interest.

By the heritable bond the debtor acknowledges the receipt of the money, or the existence of the debt, and gives an obligation for repayment; and then, in addition to that personal obligation, he conveys his lands in security of both the principal sum and interest. The deed contains regulations for settling matters betwixt the debtor and creditor in different situations that may occur, and closes with a warrant for giving seisin to the creditor, in security of the debt, principal, interest, and penalty. Under this warrant seisin is given to the creditor, and his preference is regulated by the priority of the registration of the instrument of seisin.

In this manner every debt affecting land appears on record, and this publicity has not been attended with any bad consequences; on the contrary, the security which in this way is given, by ascertaining the amount of the debts as well as the order of their preference, enables the lender to advance his money up to the value of the property, with the most perfect safety in regard to the extent of his security, and the order of its preference.

Such is the nature of the heritable bond; it gives a right in security of the debt over a certain subject, and it is preferable according to the priority of the registration of the seisin; but it is merely accessory to the personal obligation; so that whatever discharges the debt, puts an end to the security, and frees the estate. Hence it will be understood, that the property in the debtor remains entire, and on his death passes to his heir by service and infeftment, as if no such security existed; the heritable debt, however, remaining a burden on the estate, or being discharged by payment or intromissions, according to circumstances. It is in this manner a landed proprietor may render his land a fund of credit.

OF THE INVOLUNTARY SECURITY.

The Involuntary or Legal Security arises from the diligence of the law, which is open to every man that holds a voucher of debt against a landed proprietor. This diligence is of two kinds; 1. By inhibition the proprietor is prevented from contracting future debts that may interfere with the claims of the inhibiting creditor, and from disposing of his estate to the prejudice of that creditor; 2. By adjudication the estate is attached in payment of the debt, principal, interest, and a fifth part more; and the moment that a citation is given on either of these diligences, as they are termed, that is, the moment the inhibition or adjudication is fully executed, they are guarded by *litigiosity*, a principle acknowledged in practice, and which puts an end to any subsequent conveyance or security over the heritage of the debtor, which might deprive the creditor of the effect of his diligence, that is, of his inhibition or adjudication.

The adjudication is a form of action before the Court of Session, by which the estate of the debtor is decreed to belong to the creditor, in payment of his debt, principal, interest, and a fifth part more. But this action has varied much from what it was originally.

By c. 24. of Alexander II. it was enacted, that where the debtor had moveables they should be taken in payment of the debt;—if there were no moveables, the heritage of the debtor was to be taken and exposed to sale at four different head courts. When a purchaser appeared, as much of the land was directed to be sold as should pay the debt—and no purchaser appearing, then a proportion of the land, equal to the debt, was to be set apart at the sight of a jury.

During this period, the apprising, as it was originally called, was a fair and honest diligence, by which a just proportion of the debtor's heritage was given in payment of his debt, and the sale was absolute and irredeemable. In this state matters remained, till, by the act 1469, c. 37, an attempt was made to render this diligence more acceptable to the landed interest; and with this view a power of redemption within seven years was given to the debtor.

The effect of this change might have been foreseen. The appriser, by this act, ceased to be absolute proprietor; he became a mere temporary proprietor, who not only had no interest to improve the land, but whose interest lay perfectly in opposition: His object was to make the most of it while it remained in his hands; and this he could do only by exhausting or wasting the ground. But this form of diligence was to undergo a much greater degree of debasement; for hitherto the apprising preserved a just proportion betwixt the land given out and the debt; it was conducted before the sheriff of the county and a jury of the neighbourhood. The power of redemption tended to loosen these forms. In place of being conducted before the sheriff of the county, the appriſing proceeded before a meſſenger at arms *as sheriff in that part*. In place of being held in the county, the court was held in Edinburgh; and in place of a jury of neighbours, a jury of the loweſt deſcription proportioned the eſtate; ſo that in a very ſhort time the eſtate, whatever its value might be, was appriſed to the creditor in payment of his debt, however diſproportioned; and by the lapſe of ſeven years the property became the creditor's: And many great eſtates were in this way acquired.

A proceeding ſo ſhamefully unjuſt could not be ſuffered; and the Legiſlature, by the act 1621, c. 6, provided, that during the years and ſpace the lands are redeemable, the creditor ſhall have right to no further part of the rents than what will pay the intereſt of the debt; and if the creditor ſhall intromit with any greater proportion of the rents, they ſhall be imputable in extinction *pro tanto* of the debt; and if they ſhall extinguiſh the debt, principal, intereſt and expenſes, the compriſing ſhall *ipso facto* expire. This act gave riſe to a variety of intricate and haraſſing queſtions of accounting betwixt the debtor and creditor; and the ſmalleſt balance of the debt remaining due at the expiry of the legal, had the effect of transferring the eſtate to the creditor.

It was next found neceſſary to equalize the diligence of creditors; and this was done by the act 1661, c. 62, which gave a *pari passu* preference to all appriſings within year and day of the firſt effectual one.

This form of attaching land, from the change that had taken place upon it,—from the intricacy of the proceedings,—from the queſtions to which it was apt to give riſe,—and from the expenſe with which it was attended, required to be reformed; and by the act 1672, it was changed from its ancient form, to that of an action before the Court of Seſſion.* The moſt remarkable thing that took place upon this occaſion, was an attempt to bring back the adjudication to its original purity, by enacting, that a proportion of the eſtate ſhould be given off to the creditor, preciſely equal to the amount of his debt. This, however, was not acceptable to the landed intereſt; and it was evaded, by giving an option to the debtor to produce his titles, and clear incumbrances; and, where this could not be done, a general adjudication of the whole eſtate was to continue to take place.

This put a total bar to the meaſure. It has never yet been in the power of a debtor to clear off incumbrances; and conſequently there has not been, from the date of the ſtatute, a ſingle inſtance of a ſpecial adjudication, where the preciſe value in land has been given off to the creditor. All the attempts that have hitherto been made, to comply with this alternative of the statute, have only had the effect of occaſioning delay; but in no inſtance has this option been found practicable.

---

* This affords an example of the change from jury-trial in civil cases that took place in this country. The apprising proceeded on a brieve; and it was by the verdict of a jury that the estate was valued and adjudged to the creditor under the sheriff of the county, and then under a sheriff in that place, until the corruptions of the system required a change, and led to the act by which the old forms were swept away, and in their place an action before the Court of Session substituted. It is in this we have a magnified picture of what took place at a more remote period, and by the gradual operations of practice, and the influence of new courts, in all the departments of civil business.

This ſtate of the diligence has gradually influenced the deciſions of the Court; and although ſtrictly the expiry of the legal ought to convey a right of property to the creditor, yet practice has required a declarator of the expiry of the legal to produce this effect; ſo that until this declarator, the modern adjudication is a mere ſecurity for the debt, principal, intereſt, and a fifth part more of the debt, which, by payment of the debt, may, at any time, be cleared off. It is only after the declarator of the expiry, or by a charter of adjudication and infeftment, followed by forty years poſſeſſion, that the right in the creditor becomes a right of property.

As the adjudication is thus from the first a burden on land, its publication became necessary; and this has been attained by its entering a register devised on purpose, which contains an abstract of the adjudication—the parties—the debt—and the subjects over which the diligence extends.

It remains only to take notice of the Judicial Sale. This action may be brought by any heritable creditor; but it requires that the estate should be bankrupt, that is, that the interest of the debts secured upon it shall exceed the rents of the estate. Where this is the case, the Court authorise a sale by public roup, and the price is divided amongst those having securities over the estate, agreeably to the rules of preference established by law. Where the rents exceed the interest of the debts heritably secured, no sale can take place; but these rents will be paid over to the heritable creditors.

In this view of the diligence of the law for affecting land, the influence of the landed proprietor is very conspicuous, though it is by no means clear that his true interest has been fully perceived, or the arrangements very fortunately made. The departure from an absolute sale was in many ways prejudicial, though now, where it has become nothing more than a security, these inconveniences are not felt. But there is one consequence which every man of business must have witnessed with concern, and that arises from the *pari passu* preference of adjudications.

This preference renders it necessary, whenever a creditor adjudges, that every other creditor shall do the same; consequently, if a man be possessed of land worth 20,000*l.* and have debts to the extent of 12,000*l.* or 15,000*l.*, if any one of his creditors shall be advised to adjudge, the whole must follow the example, which raises the debts at once one fifth above their former amount; and this addition, with the expense of a sale, will exhaust every fraction of his property, and leave him without one shilling of reversion. Such scenes every man of business must have witnessed.

Of late, however, it has happened (so rapid has been the rise in the value of landed property), that the delay of a few years has been thought to be cheaply purchased by any sacrifice; and therefore the means of protracting a sale have been considered as valuable. But the increase of the debts, and the expenses which adjudications and the various diligence of the law occasion, have often been the cause of very distressing scenes; and the question is, Whether it were not a most desirable thing for a landed proprietor to possess the means of stopping such proceedings, and preventing such expense, should he be so inclined? This would not narrow the powers of the landed proprietor, nor deprive him of any one advantage, real or imaginary, he may at present enjoy; it would merely add to his powers that of preventing his creditors from tearing his estate to pieces, and depriving him of a reversion he might otherwise retain.

For instance, were a law enacted which should enable a landed proprietor to put his property under the management of the Court—should enable them to convert it into money—to place the price in the national banks, subject to their orders—and to divide that price amongst those who may lodge claims—and at the same time put an end to all further diligence, and all expense; it is obvious that the one fifth added to the debt by the adjudication, would be saved, as well as much of the expense of the sale; and thus in many cases a reversion might be secured to the unfortunate debtor, who at present must remain a melancholy observer of the waste of judicial forms, and of the expenditure of funds which, on such a plan as is here suggested, would be saved to him.

This is not a measure that any one could force upon a landed proprietor; and so far it would not deprive him of the advantages he may conceive to be valuable, and which are at present within his power. It is merely a means of saving expense, which, in innumerable instances, a debtor may wish to possess. It puts a stop to scenes which every honest and humane creditor would wish to avoid, but which at present he may be forced into by a malicious or a dishonest creditor. To those who have not witnessed the destructive effects of a judicial sale, and of the diligence with which it is attended, this proposal can scarcely be duly appreciated; while those who have fully considered such cases, must be sensible of the advantages to be derived to the landed proprietor from such a measure.

SECT. V.

Of Leasehold Property.

No subject can be more generally interesting than that which falls to be treated of under the present section, since on it the prosperity and advancement of agriculture so much depend; while the lease, as a form of conveyance, may with so many advantages be introduced in lesser properties, as a substitute to the feudal investiture. Leasehold property may therefore be considered, 1. In relation to agriculture; 2. As a title to land. In this order they shall be placed before the reader.

1. OF LEASEHOLD PROPERTY IN RELATION TO AGRICULTURE.

The lease, in order to forward the true interests of agriculture, must be founded on the just rights of the contracting parties. Unfortunately, however, the rights of landlord and tenant had taken their form, while the tenantry of Scotland were very inferior in knowledge and in capital to what they now are, and while the state of the country was very different from what it is in the present day. Hence certain rights have been recognized in the landlord, which, however natural, or even necessary for the interests of both parties in the former state of this country, are now not only unnecessary, but hurtful, both to landlord and tenant; for it is a truth that cannot be sufficiently impressed on both descriptions of men, that the tenant cannot be materially injured, or oppressed by any general regulation, without its effects reaching the landlord; nor can the tenant enjoy a general advantage, without the landlord's participation. A seeming power placed in the hands of the landlord, does not always produce a real power; while a power given to a tenant may, without diminishing the power of the landlord, contribute most materially to his advantage.

It must indeed be admitted, that whatever may render the situation of the tenant insecure, or even give him the idea of insecurity, in regard to his agricultural property, must lessen the value of that property, and discourage in a great degree the vesting of capital in agricultural pursuits: whereas, by giving certainty to that species of capital, and a perfect freedom in the disposal of it, that certainty, joined to the natural feelings of mankind, will tend greatly to draw capital to that object, to the certain benefit of the landed proprietor.

These considerations will be found to apply not only to the legal rights of landlord and tenant, but even to those regulations that are often to be met with in the lease of the present day; and therefore it may not be improper to refer slightly to these rights, and to the most obnoxious of the obligations to be met with in the lease.

Independently of the special agreements of parties, when the landlord gives out his land to a tenant, the tenant is at common law bound to labour it agreeably to the rules of good husbandry, and he will be prevented from running out or wasting the ground. The tenant has a right to the use of the surface only; he has no right to the trees growing on the land, nor to the minerals under the surface. It is to the surface, for the purpose of raising crops during the currency of the lease, that the tenant has right. This right passes to his heir during the period of the lease; but the tenant has no power to assign nor subset, nor consequently to give a right past the heir at law. The landlord's right consists in the rent he receives, and the power of enforcing payment of it, under the hypothec conferred on him by law.

Without a lease, the power possessed by the tenant continues only for a year; but with a lease, when followed by possession, the right of the tenant continues, under the act 1449, during the period stipulated by the lease. By this statute, a lease so supported is declared to be effectual against purchasers, and all others possessing a feudal right in the lands; and it is the conditions connected with the written lease, that require to be well considered, and rendered liberal and just, or which perhaps the public law ought in a certain degree to protect.

The great points for consideration refer to the rules of management imposed on the tenant, and the security of agricultural capital. With regard to the former of these, it can scarcely be made a question now, whether the tenant ought to be permitted to use his own knowledge and skill in directing matters, in which his own interest is so materially interested. The whole point, therefore, refers to such general rules as may prevent acts from being done which would materially injure the farm; but in few cases that can be supposed, would it be attempted to lay down rules that might teach the farmer his own art.

It is obvious, however, that the interest of the individual, as well as of the community, require protecting powers in favour of the proprietor, more especially in those cases where with much care and at great expense he has brought a farm into a high state of cultivation. With this view, there are two means which practice has introduced; one is, by a high and penal rent, to insure that mode of culture which may be necessary to retain the farm in its improved state; the other is, a power of prohibiting certain acts; but as these may be committed unknown to the landlord, a penalty must be imposed on the commission of the act. These in the common case are both in a similar situation, in so far as the tenant does the act with all the consequences before him, and therefore may be said to have consented to the rent or penalty in the very commission of the act to which either may have been annexed.

The propriety of giving such protecting power to the landlord is now sufficiently understood; still there is a distinction betwixt the rent and the penalty:—The former entitles the tenant on all occasions to follow the prohibited mode, on payment of the additional rent stipulated by the lease; whereas in the case of a penalty, the landlord may prohibit the act, even should the te-

tenant offer to pay the penalty. This distinction, however, does not necessarily carry with it a difference in the decision of the Court; for where the penalty is reasonably proportioned to the damage done, or which may be done by the tenant, the penalty is as clearly exigible as the rent. The only effect is, to enable the Court, in the case of penalty, to inquire whether it be not too high, and by their equitable powers, to restrict the penalty to a fair indemnification of the damage.

But what is of principal importance, and which seems to require the most serious attention, and perhaps a departure from the natural prejudices of the landlord, is the preservation and freedom of agricultural capital. Where a tenant has honestly and fairly improved his farm, and expended his capital in a manner that has materially raised the value of his farm; should any misfortune overtake him, there is no gentleman that would allow himself to seize this opportunity of tearing from him and from his creditors his interest in the lease. Neither would any gentleman take advantage of the state of his tenant's family, and prevent the tenant from disposing of his lease in the event of his death, in the manner best suited to the circumstances of that family; and it is this very feeling on the part of the landlord that is the principal cause of the misfortune: for however safe the tenant may be, and in general truly is, in the hands of his landlord; yet his absence, his disability to act, or the minority of the heir, as well as the whim or caprice of an individual, besides the necessity of humouring an individual on whom so much depends, must ever preserve the tenant in a state of uneasiness and dependence, and must materially damp that spirit which would otherwise so naturally turn capital to that object. Such powers in a landlord must render the tenant dependent; and the landlord must resolve to purchase that dependency at a considerable diminution of his yearly income.

This power on the part of the landlord is not a necessary consequence of the contract betwixt landlord and tenant, but seems to have arisen from causes long ago extinct, and to be connected with a state of manners materially different from those of the present day.

As long as the security of the proprietor from foreign inroad, or his preservation from the resentment of a neighbour, arose from the characters of his tenants, or their attachment to his person, the choice of a tenant might have been a point of primary importance. A landlord, too, was bound for the good behaviour of his tenants; and this also was a reason why the tenant should have been such as the landlord approved of. But however satisfactory a reason this may afford for the restrictions under which tenants were formerly laid in the disposal of their lease, it can give little support to the modern rules on this subject.

Out of scenes of comparative indolence and inaction, tenants have been roused into a state of activity and diligence. Capital has been collected and skill acquired: and it is this skill and capital the tenant brings into action in the contract of lease. Ought this capital then, in sound wisdom or expediency, the moment it becomes united with the property of the landlord, to be taken from under the power of the tenant, and totally disregarded by the law? Ought it, in the event of the tenant's death, to be put beyond his control? On the approach of age, or the stroke of disease, ought it to be forcibly continued under an inefficient management? Or, in the event that his credit fail in the course of successful improvements, ought all he has done to become instantly the property of the landlord? In another view, ought a tenant who has raised a property for his infant heir, to be tied down to place that property in the management of a tutor or factor, whose want of interest or of energy will be more likely to dissipate his savings, than to secure them for his heir?

These are all points deeply interesting to the agricultural community, and worthy of the most serious attention from every landed proprietor. Can it be supposed, that a tenant who has no power of disposal of his lease, will employ his capital in the improvement of his farm with equal freedom as if it were at his disposal? Or, were he to apply to a monied man for assistance, would he succeed equally in his application with or without the means of giving a security over his lease? But perhaps these questions are connected with certain prejudices, of which the landed proprietor is not fully aware. Let him suppose then a general law, which should force the heir of every merchant to continue in precisely the same line of trade with his ancestor; or which should secure the capital of the merchant to his heir-at-law, without the possibility of his assigning it to another, or of dividing it amongst his children, or of preferring one child to another: Or, to crown the absurdity of such a regulation, let him suppose that, in the event of the bankrupty of the merchant, his whole stock should instantly become the property of his Majesty:—The injustice and impolicy of such regulations could scarcely fail to be perceived. But they are not more unjust or impolitic, than what arises from the want of a power of assigning a lease, or of defeating the interest of the heir-at-law; nor worse than that usual clause, by which, in the event of the tenant's bankruptcy, the lease is forfeited to the landlord.

The consequences certainly must be, that as long as the law remains as it does at present, the interest of the landed proprietor must suffer, and, through him, the interest of the community at large, whose prosperity so much depends on the agricultural improvement of the country.

May it not, therefore, be allowable to suggest the following points, as affording fit subjects of consideration. 1. Whether it would not tend to the benefit of all concerned, that the tenant should have the sole and entire interest in the lease during the whole of its period, so as to enable him to assign or dispose of the lease, or to give it in security; he and the person deriving right from him remaining liable in all the obligations incumbent on the tenant. 2. Whether the tenant ought not to possess the power of transferring his lease by his settlement, of preferring one child to another, or of giving it to a stranger. 3. Whether he ought not, in the case of a minor heir, or of daughters, &c. to possess the power of disposing of the lease for the benefit of his successors. And lastly, Whether every danger likely to ensue to the landlord from these powers might not be avoided, by giving him a right to purchase the interest of the tenant, wherever it was meant to be conveyed to a stranger; or whether indeed the safety of the landlord might not be secured, in a variety of ways, consistently with the just interests of the tenant.

2. OF THE LEASE AS A TITLE TO LAND.

The feudal investiture has been used throughout the country as the title of the most insignificant heritable property. There is not a '*cot-house and a kail-yard*' that is not held by deeds as formal, and nearly as expensive, as the titles of a valuable estate. The consequence of this necessarily is, that the proprietors avoid completing their titles; and these possessions depending on the same feudal principles that regulate great estates, the utmost confusion arises, and the property is lost to the just proprietor, or sunk in the expense with which the titles are unavoidably attended.

In such cases, how great would the relief be, were the proprietors permitted and encouraged to exchange their titles of possession (the charter and seisin) for leases, either perpetual, or what might be considered as equivalent to a perpetuity, for a period of 999 years.

In transmuting such titles, or in constituting an original right of this kind, the expense would be moderate, and would produce an effectual title; for the heir, in place of the service, and precept of *clare constat* and seisin, (equal to the purchase-money almost of such properties), would step into possession without expense, and his possession would effectually complete his right: Where again the property was to be disposed of, a simple assignation, intimated to the landlord, would complete the right of the purchaser.

There is one consequence flows from the present titles;—the subject may be rendered a security for money. But the same advantage might be derived from a record of leases; and a lease might be assigned in security of a debt, the priority of which right might be ascertained by entering such a record, as effectually as by the intervention of an heritable bond, and the registration of a seisin.

From such a plan, one advantage would arise, it might serve as an experiment for the proposed registration of the disposition, in place of the seisin following on the disposition; for if it were found, that the registration of the lease answered every purpose to which the registration of the seisin is applied, it would afford a complete assurance, that the registration of the disposition would be equally useful.

If, therefore, perpetual leases were introduced into practice, and were they to receive effect by registration in a new record to be introduced for that purpose, the utmost relief would be given to small proprietors; and it might lead, in all probability, to a safe and cheap conveyance of property of greater value, and so come to improve materially the conveyancing of the country.

SECT. VI.

Of the Provision for the Clergy, and the Support of the Poor.

Under the present section, the provision for the clergy, and the means of supporting the poor, are to be treated of merely as they relate to the landed proprietor, or may be supposed to affect the commerce of land.

OF THE PROVISION FOR THE CLERGY.

The provision for the clergy arises from the rents of land, that is, from the teinds, which form a burden on all the lands in the kingdom. But as this burden is affected by the circumstances under which the teinds were placed at the time of the Reformation, a general view of the nature of teinds becomes necessary, in order to give a just view of this burden.

Teinds are to be considered as a proportion of the rents of land; and these, before the Reformation, stood in situations that still affect the nature of the teinds of different estates. Some belonged to the Religious Houses; others to the Dignified Clergy; others to the Pastor; and some, previous to that period, had been irregularly given out to Laymen; and lastly, teinds had been given for the use of Colleges.

On the Reformation, and consequent abolition of the abbacies and monasteries, both the lands and teinds of these establishments fell into the hands of the Crown. So also, on the abolition of Episcopacy, the teinds that had been in the hands of the Dignified Clergy, fell to the Crown, of which, such part as had not been gifted by the Crown, were restored on the re-establishment of Bishops; and, on the final suppression of that order, fell again to the Crown. The teinds derived from the Religious Houses, and part of those which had belonged to the Dignified Clergy, were given out to Titulars of tithes, as they were called; and part of the Bishops' tithes are still in the hands of the Crown. These grants being given rather too profusely, Charles I. endeavoured to check and resume the rights, which led to a submission to his Majesty by all concerned; and the object of the decree-arbitral pronounced in that submission, was,—to secure an annuity to the Crown out of the teinds,—to give to the heritors a power of pursuing a valuation, and of purchasing their teinds,—and to the clergy a sufficient provision. For this purpose, commissioners were appointed; whose powers, by subsequent regulations and enactments, are now possessed by the Court of Session, as Commissioners of Tithes; and it is by them, in that character, that all valuations of tithes, and all questions in regard to the stipends of the clergy, are determined.

This relates to the teinds which belonged to the Religious Houses and to the Dignified Clergy; all of which, it is believed, were given out, with the exception of part of the Bishops' tithes, that are still in the Crown. The tithes, again, which were in the hands of the Pastor serving the cure, before the Reformation, fell partly into the hands of the patron, in consequence of bargains made with the pastor; and when the patron was deprived of the patronage, by 1649, c. 39, he received right to the whole teinds of the parish, on condition of his providing a sufficient living for the pastor; but he was bound to sell their teinds to the heritors at six years purchase. And when, by the 12th of Anne, the right of patronage was restored, the teinds were not demanded back; so that these teinds remain (under the burden of selling) with the patron.

It will thus be underſtood, that all teinds, of whatever kind, may have been valued; that thoſe holding of titulars may be purchaſed at nine years purchaſe, and the teinds held of patrons at ſix; and hence the teinds of a pariſh on which the ſtipend, or the augmentation of the ſtipend of the miniſter, is to be allocated or proportioned, may ſtand as follows:—There may be teinds in the hands of laymen, who, before the Reformation, had received from churchmen both ſtock and teind, which never had been ſeparated; and where ſuch rights are prior to 1587, the lands are not ſubject to teind: There may be teinds in the hands of the Crown,—Teinds in the ands of the titular,—Teinds derived by the heritor or proprietor of he land from the titular,—or teinds held in leaſe of the titular by he heritor;—Or the teinds may be in the patron, or ſold or let in aſe by the patron to the heritor; and of theſe, ſome are more di- ctly liable to the augmentation than others.

The rule of allocation is juſt and ſimple. All teinds are equally ble; and were they all ſtill in the hands of the Crown, they uld all be equally liable to allocation. But where the Crown given out part of the teinds, what remains in the hands of the own, unleſs they be biſhops' teinds, muſt be firſt taken, before ſe can be touched which have been given away by the Crown; , in the ſame way, where the claim comes upon a titular or pa- , the teinds he has ſold or let in leaſe are not to be affected, un- hoſe are exhauſted that remain in the hands of the titular or patron: And here two things will be obſerved;—that in regard to the teinds let in leaſe, the rents muſt firſt be taken, before the ſurplus teind-duty enjoyed under the leaſe can be allocated upon;—and a diſtinction will alſo be made betwixt the teinds of other lands held by a titular or patron, and the teinds of his own lands.

The order of allocation is this: 1. Teinds in the hands of the the Crown, under the exception of biſhops' teinds; 2. Teinds in the hands of the titular or patron, (the teinds of lands not their own property), the tack-duty of what is ſet in leaſe being exhauſted before the ſurplus teind-duty can be touched; 3. Theſe being exhauſted, the teinds of the lands belonging to all the heritors in the pariſh, that is, titulars' or patrons' teinds, as well as the teinds which have been purchaſed from the titular or patron—all of which will be affected equally; 4. Biſhops teinds in the hands of the Crown; and *lastly*, Teinds which have been ſet apart for hoſpitals and colleges. In this manner it is that the augmented ſtipend of the preſent day is drawn from the teinds of the pariſh.

But it may have happened that the teinds of a pariſh are inſufficient to afford a proper proviſion to the clergyman; and wherever they are inſufficient to give what, at the received or court converſion of grain, is equal to 150*l.* Sterling *per annum*, a parliamentary grant of 10,000*l.* a-year has been given, from which as much may be added as will raiſe the ſtipend to that ſum.

To complete the view of the legal proviſion for the clergy, it may be proper to add, that every clergyman is entitled by law to a manſe, a glebe, and graſs for his horſe and two cows, to be ſet apart by the preſbytery.

The manſe includes a dwelling-houſe, (in ſome inſtances coſting above 1000*l.* Sterling), stable, barn, and byre, with a garden, for which half an acre is allowed. The ordinary repairs are given by the incumbent; but extraordinary repairs muſt be made by the heritors.

The glebe conſiſts of four acres of arable land, or, where there is no arable land, 16 *soums* of graſs land, (each ſoum being ſufficient to paſture ten ſheep or one cow). The glebe is a burden on the church-lands within the pariſh, or, if there be none, on the heritors at large.

The graſs for a horſe and two cows is given from church-lands; or, where there are none within the pariſh, or they are at too great a diſtance, the miniſter is entitled to 20*l.* Scots annually as an equivalent; and this falls as a burden on the proprietors of church-lands.

It is through the teinds that the landed proprietor has any connexion with the proviſion for the clergy; and where the teinds have been valued, it is the valued duty only that the heritor pays, and that either to the miniſter, or to the party having right to the teinds; or, where his teinds have been purchaſed, he retains them, excepting where the other teinds primarily liable are exhauſted; and then a future augmentation may be allocated on his teinds, proportionally with the teinds of other heritors in the pariſh who have heritable rights. Where the teinds have been early valued, the teind-duty will be very different in its amount from the teinds of land which never have been valued. But this makes no difference to the purchaser; he knows at all times the value of the teinds, whether they have been previouſly valued, or remain ſtill to be valued: The teind thus aſcertained is no more than a feu-duty, or any other aſcertained burden, and the purchaser proportions his price accordingly. He pays for no more than what he actually receives value for. Teinds in this way do not affect the commerce of lands.

To close this subject, it is only necessary to explain in what manner teinds are now valued. The action of valuation proceeds before the Court of Session, to which the titular and clergyman are made parties, as both have an interest in it. A proof is allowed; and the following particulars will show in what manner the teind is ascertained. 1. When the lands are in the natural possession of the proprietor, evidence must be brought of what they would give were they let on a nineteen years' lease. 2. When let in lease, the full rent must be ascertained, by adding the value of any grassum or consideration that may have been given for the lease, with the value of victual paid to the landlord, poultry, &c. But, on the other hand, there are certain articles of deduction from the rents; as, the expense of supporting houses,—or for permanent improvements, as by embanking, draining, enclosing,—or for lime or marl furnished to the tenants: Or, where the farm is set in steelbow, that is, with stocking, &c. and a rent is put on the ground and stocking without distinction, an allowance will be made for the stocking. There are other articles, the rent of which do not go into computation, as they are not teindable subjects; as the rents of orchards, woods, peats, mines, minerals, fishings, houses, mills, machine- y, manufactures. The rents of land, under these deductions nd exemptions, being ascertained, one fifth of the free rents is ld to be the teind of the land.

The purchaser has thus the teind ascertained by a decree of luation, or he knows with precision what will be demanded of n as proprietor, in the name of teind. It is therefore the estate us burdened that he buys; and he can have no reason to com- in of a burden for which he has received a corresponding de- tion in the price.

Of the Manner of Supporting the Poor.

here is certainly a very material difference in the effect pro- d by the poor-rates in England, and the usual funds for aintenance of the necessitous poor of Scotland. The for- amount to several millions annually, have become an e- ous burden on the community, and operate very unfortunately on the poorer classes, by encouraging dissipation, and a total disregard of that prudent foresight which ought to provide for sickness and age; while in Scotland the poor-rates are in most parishes unknown, and in none heavy on the individual. The poor are composed of the old and infirm, the true objects of charity; and the general spirit of the people is such, that to be put on the poor's roll, is a matter of extreme humiliation, from which they are anxious to extricate themselves, and of which there are many instances, (after having recovered their independency), of their replacing the charity that had been bestowed upon them.

In both countries, the distinction is made betwixt those who are able but unwilling, and those who are truly unable to work: the former are held to be fit objects of punishment, the latter as entitled to aid and assistance; and for this charitable object, funds are directed to be raised, from the other members of the community, in both countries.

In all this there is a perfect similarity; but in the execution of the laws a very wide difference has taken place. The claims of the poor are ascertained, and the levying of the funds in England is entrusted to parish-officers, a duty which in Scotland is performed by the minister, the kirk-session, and the heritors of the parish: and, what may perhaps affect the spirit of the people more than any thing, is the law of settlements, as administered in England; for it is not easy to conceive, that a man should feel himself trammelled and treated as a pauper, the moment he attempts to go beyond the limits of the parish in which he was born, without looking on that law, by which his natural liberty is restrained, as conferring on him, in return, a right, to claim the support of the fund, on account of which the restraint has been imposed.

Whether it be the operation of these causes, or of others arising from the manners of a poorer and less luxurious people, there is certainly very different sentiments entertained amongst the lower classes in the two countries, in regard to the aid to be drawn from this charity; and to this, more than any thing else, is to be attributed the difference in the operation of the poor-laws in Scotland and in England.

In Scotland, this charity is confined to those who are fit objects of it,—to the aged, the infirm, the insane. As long as those only, falling under these descriptions, are entitled to the charity, it can never be an object to which the labouring poor can look with comfort; and until that shall happen, no danger is to be dreaded from the poor-laws.

In most situations hitherto, the contributions at the church-doors, the perquisites from births and marriages, and the charge for a pall or hearse hired out by the parish, have been sufficient to answer the demands of the poor; or at least these, with occasional collections, have rendered it unnecessary, in the general case, to impose poor's rates.

Thus the teinds and poor's rates, which form very formidable burdens in England, are in Scotland reduced to claims known and ascertained, or so very trifling, as not to occasion any uneasiness to the landholder; and in no shape have they been found to affect the commerce of land.

SECT. VII.

Of Land as a Means of Political Influence.

The value of land is materially affected by the political influence it affords; and there are points here that require to be explained. The qualification of the freeholder in a Scotch county is high; and, what is very singular, the qualifications actually existing, do not exhaust above one-third of the freehold-qualification of the country! Thus the total valuation of the country is above 3,800,000*l.*, while the number of voters does not exceed 2622, which, at 400*l.* each, (the qualification on the valued rent), is equal to 1,048,800*l.*, leaving unrepresented above 2,700,000*l.* or more than two thirds of the whole valuation. This great proportion is lost, either in the estates of the nobility, of minors, of those who have only fractions of superiority, or of others in whose persons is consolidated a greater extent of valued rent than 400*l.* Scots, more especially when their estates are entailed. But in whatever way it happens, the effect produced on those who actually possess freeholds, is obviously that of striking off two thirds of the valuation of the country, which is just that of giving three times the importance to the present qualification, which constitutionally it is meant to have, and which it would have, were the whole freehold qualification of the country brought into action.

The Scotch freehold depends on the tenure of the estate;—it must hold of the Crown or of the Prince;—it must have been extended to 40 shillings of old extent, or stand valued in the cess-books at 400*l.* Scots.—This requires a slight explanation. As Scotland was a feudal kingdom, that part which was held by laymen required to be extended, or valued, in order to ascertain the casualties of superiority due to the Crown; and this was done at the entry of an heir, the jury on the service retourng to Chancery the value of the land as it stood in what was alled the old extent, (a valuation probably in the reign of Alexnder III.), as well as the new extent, which was a valuation at we know with certainty was ordered by 1474, c. 54, and as generally four times greater than the old extent. This doue valuation has been distinguished by the name of the old and w extent; and they are carefully and rigidly repeated in every tour. But that part of the kingdom held by the Church, was resented by the Dignitaries of the Church, and sent no repretatives to Parliament. The heir in church-lands required no retour. When, therefore, at the Reformation, the property of the Church came into the hands of laymen, there was no old extent, and the church-land could not afford a freehold-qualification. To remedy this, the act 1661, c. 35, enacted, that "all "heritors holding of the King, and others who held their lands "formerly of bishops or abbots, and now hold of the King, "whose yearly rent doth amount to 10 chalders of victual; or "1000*l.* Scots, all feu-duties being deducted, shall be, and are "hereby entitled to elect or be elected."

But a new valuation of the lands in Scotland was introduced; and by the act of convention, August 15th, 1643, commissioners were appointed to inquire into the worth and value of every person's rent to landward. The same plan was followed by Oliver Cromwell, and completed after the Restoration. And under the act 1667, a complete valuation of the kingdom was made, which has since been termed the valued rent.* In this way the Legislature was enabled to fix a new qualification for the freeholder. Accordingly the act 1681 required, that every freeholder should possess lands holding of the Crown, of 40s. of old extent, or which stood valued in the cess-books at 400*l.* Scots of valued rent; and these form the qualification of the present day. The evidence required of the old extent, is a retour of a date prior to the 16th of September 1681, and the valuation is ascertained by the valuation rolls made up by the commissioners.

Thus the qualification of a freeholder requires that he should hold of the Crown or Prince, and that he should be infeft in lands of 40s. Scots of old extent, or in lands entered in the cess-books at 400*l.* of valued rent. But it is not necessary that the freeholder should have the property of the lands: A right of superiority where the use and property of the land is given to a vassal, in return for payment of a penny Scots, or for a mere elusory duty, is sufficient; and it is not necessary, that this right of superiority, should be more than a right of liferent held by the voter; hence the introduction of nominal and fictitious votes.

CONCLUSION.

In the view that has been prefented to the reader, there has bee laid before him, the nature of the feudal title as received in the law of Scotland, and the degree of ſecurity it is calculated to afford;—The power he poſſeſſes over his eſtate as a pledge, and the means by which it becomes a fund of credit;—The right to regulate his ſucceſſion, enjoyed by the proprietor, and the conditions under which he may lay his repreſentatives;—And finally, the political influence which becomes connected with land, from the peculiar ſituation in which the freehold-qualifications of this country are placed. In theſe advantages, as well as in the freedom from burdens which affect land in England as ariſing from tithes or poor's rates, the Scotch landed proprietor is peculiarly fortunate; and it ſeems uſeful and proper that his ſituation in all theſe particulars ſhould be fully underſtood.

---

* In valuing the country, each county is separately valued by commissioners appointed for that purpose; and although these commissioners may have taken a different scale of valuation, yet each valuation serves for a scale of the value of the estates in that particular county, in so far as each is consistent itself. And as the general tax is proportioned according to a certain rate levied from each county; if that be duly proportioned, no inconvenience can arise from the scales of the respective counties being different; each is a regular scale in itself, and will serve to proportion justly and equally the sum set apart for the county, of which it is the scale. It is therefore on the adjustment of the sums put upon the respective counties, that the equality of the tax depends; and which being at any time duly adjusted, must render the imposition of taxes perfectly fair and equable over the whole kingdom.

It has been further attempted to bring before the reader ſeveral points of importance, both in reſpect to the feudal title and the ſituation of the tenant's intereſt, which admit of being improved, and which are highly worthy of the attention of every man intereſted in the proſperity of the country.

Theſe ſuggeſtions are the reſult of practical obſervation; they proceed from no improper ſpirit of reform, but are the natural changes that will in all probability take place,—which therefore can never be hurtful; and, by being brought under the notice of the honourable and enlightened body to whom theſe ſuggeſtions are addreſſed, may be the means of introducing, at an earlier period, the advantages they are calculated to afford.

EDINBURGH,
No. 9. *Society, Mar.* 1813.

CHAP. II. APP. No. 2.

ON THE STATE OF LANDED PROPERTY IN SCOTLAND,

BY

The Reverend CHARLES FINDLATER,
Minister of Newlands in Peebles-shire.

1. *On the various Modes of Holding Possession of Property in Land, as affecting Agriculture.*

THE beſt conſtitution of property in land, to excite and encourage agricultural improvements, would infer, that ſole command and control over it, that excludes all obſtruction to management, as alſo that abſolute power of diſpoſal, which would ſecure to the induſtrious improver, the full poſſeſſion and enjoyment of the fruits of his application of labour and capital. But both laws of conſuetude, and of poſitive enactment, have put bars in the way of ſuch a favourable conſtitution.

In Scotland, as in many other countries, the imperious calls of mutual defence, in times of turbulence and diſorder, led to that interweaving of landed property, which might render it, in the ſtricteſt ſenſe, a joint and common concern. Small contiguous proprietors would join their dwellings together in little villages; their cultivated land, around their dwellings, would be intermixed in *run-ridge*, that they might incur equal riſk; and, for like reaſon, their cattle and flocks would *paſture in common*, upon the more diſtant fields. The ſame contrivance, for the ſame purpoſes, would be adopted by the greater proprietors, in allotting their lands among their tenantry.

Before a general ſtatute was thought of in Scotland, for diviſion of commons, the inconveniency of common paſturage was felt, and a proceſs of *soum and roum* was made competent to any of thoſe concerned, by which the proportion of the cattle ſent by each party to the paſturage, was limited to that number which his proportion of the arable land, to which the right of paſturage belonged, could enable him to fodder in winter.

The diviſion of commons is the ſubject of the general ſtatute of 1695, which affords an eaſy and unexpenſive mode of proceſs, by which it is competent to any of the proprietors, having intereſt of property in a common, to compel the reſt to a diviſion.* And in conſequence of this facility given by the Legiſlature, a ſenſe of common intereſt has led to the almoſt univerſal diviſion of commons into ſeveralty, through Scotland. Those that have merely a right of servitude † upon a common, but no right of property in the land (which must be determined by the written titles relating to it) are not entitled to force a division; nor can those pursuing competently for a division, force a commutation of these servitudes. The division, however, would not, for want of such concurrence, be defeated: but if the servitude was one of pasturage, some one of the proprietors would get the largest share of the land, and be burdened with that servitude; and the same if it was a servitude of peat for fuel; unless, according to the latitude of the act, the mosses were agreed to be left undivided, to be possessed in common, as before. If none have interest in the common, but contiguous proprietors of land, the common is shared out to each, according to the valuation in the cess-books of these lands belonging to him, to which the right in the common was understood to be attached; if others having interest, without having contiguous lands, concur, the division is commonly made according to the actual interest possessed by each.

---

* The words of this statute are:

"All commons, excepting those belonging to the King in property, or royal "burghs in burgage, may be divided at the instance of any individual having "interest, by summons raised against all persons concerned, before the Lords "of Session, who are empowered to discuss the relevancy; to determine upon "the rights of the parties concerned; to divide the same amongst them, and "to grant commission for perambulating, and taking all other necessary probation, to be reported to the Lords, and the process to be ultimately determined by them: Declaring, That the interest of the heritors having right "to the common, shall be estimated according to the valuation of their respective lands and properties having right to that common, and that a portion be adjudged to each adjacent heritor, in proportion to his property; "with power to the Lords to divide the mosses, if any be in the common, "among the parties having interest; or in case they cannot be divided, that "they remain in common, with free ish and entry, whether they be divided "or not."

† A proof of forty years uninterrupted possession establishes the right.

Lands held in run-ridge (that is, lands which, though held in severalty, are possessed in alternate minute divisions) are ordained, by similar provision of the same act 1695, to be disentangled into distinct continuous masses.

Such a holding of arable lands is evidently so inconvenient, and so entirely obstructs all improvement, that, one should think, a common sense of interest, would easily lead all concerned, to adopt a better arrangement by consent; yet, so untractable are the generality in regard to *meum et tuum*, that a compulsory law to that effect was found necessary. Hutcheson, in his *Justice of Peace*, seems to think, that our Supreme Court have been rather scrupulous as to the extent of power they have thought it competent for them to assume, as to the execution of this clause of the statute.

There are, no doubt, limits beyond which the compulsory consolidation into distinct single masses of land, held alternately in separate smaller masses, might well be considered as an arbitrary interpretation of the law. Suppose, for instance, there are four fields lying contiguous, each consisting of 40 or 50 acres, the first and third being the property of A, the second and fourth the property of B, it would seem a stretched interpretation, not at all warranted by the indispensable uses of agriculture, to say, that A should be able to compel B to surrender his second, and accept of A's third in exchange, in order that each should have an 80 or 100 acre field, in one mass, instead of having, each, two separate fields of 40 or 50 acres each. But, by some decisions, it would appear, that where the fields held alternately consisted of more than four acres in each distinct mass, our Supreme Court have judged the clause relating to separation of run-ridge as inapplicable.

In enacting the statute of 1695, the Legislature was under no embarrassment from the rights of the Church, the subject of tithes having been previously settled by the decreets-arbitral of Charles I. *ann.* 1629, as confirmed by act of Parliament in 1633.

Neither does any difficulty occur in practice, from any seignorial right of the lord of the manor. No such right is known in Scotland; the common is considered as entirely belonging to the proprietors of those lands to which the use of the common is found attached; and those who have nothing but an incorporeal right of servitude constituted by use, though they cannot be deprived of this right of use by a division, yet they cannot claim any part of the land divided, and may be allocated on the portion of one of the sharers, who is allowed the more, in consideration of the burden.

Inclosure may be of use or of disadvantage, according to circumstances: And accordingly, the statute makes no provision, obliging those who divide commons, to inclose their several allotments. *Permanent inclosure* may be of indispensable use, in countries consisting of hill and dale, to defend the vales under cultivation, from the herds and flocks pasturing at large upon the mountains, or to defend plantations of trees from injury; but in level arable districts, *moveable inclosures of flakes*, serve the purposes of appropriation of fields in crop for feeding, fully as well, as the permanent inclosure of hedges and stone walls. And where *these* are not requisite for shelter, or to afford fuel, *those* temporary moveable inclosures are much preferable, in respect of their occupying no space, nor affording harbour to vermin, nor shelter to weeds. Where inclosure, however, is found necessary, the statute of 1661 had previously given, to the proprietor inclosing, a right to compel the conterminous proprietor to bear the one half of the expense of the march fence, by a simple process before the Sheriff, or county Judge, who likewise is empowered to determine what kind of fence is proper. In some instances, where it glaringly appeared that the march fence was of no kind of use to the conterminous proprietor, our Supreme Court have freed him from bearing his half of the expense. The general presumption of the law is, nevertheless, that inclosure is of equal advantage to the parties on both sides. And if the party exempted were afterwards to take advantage of the march-dike in forming an inclosure, he would immediately be found liable in that half expense, from which he had formerly obtained exemption; it being evident, from his own deed, that he has no longer a plea for exemption, from his deriving no advantage.*

Straighting of marches is also provided for by statute 1661, as improved by statute 1669. The line of march, at the sight of the Sheriff, is fixed, so as to be most convenient for both parties; and if, for that purpose, it may be found absolutely necessary, to cut off land from one side, which cannot be compensated by land from the other, the difference is compensated in money; but if the land receiving it is under entail, it must be entailed; no difference of this kind, making any alteration in that respect.

Winter herding, as a protection for wood plantations, hedge inclosures, and winter crops, is provided for by statute 1669, which confers right on the injured party to *poind*, or detain the trespassing cattle, in security for a fine which he can exact, of half a merk, or sixpence two-thirds for each trespassing animal, without distinction of kinds, as also for the damage that can be instructed.

---

* Hutcheson's Justice of Peace.

Such are the wholesome statutes enacted in favour of Scotch landed proprietors, in disentangling their property from common rights, for the encouragement of agricultural improvement.

The unlimited power of entail, conferred upon Scots landed proprietors by act 1685, may, probably, have tended just as much to have discouraged such improvements, as the above-recited statutes to have encouraged them.* By this pernicious statute, every proprietor of land, is empowered, out of his mere caprice, and without authority of any judge, to lock up his lands from commerce, (not only in favour of persons actually existing, whom he can see, and for twenty-one years † farther, but) to all succeeding generations, as far as he can conceive and imagine.

As the entailer is empowered to prevent his lands from being either alienated or burdened with any debt, the possessing heirs of entail, are merely liferent usufructuaries of the lands. They can give no security upon their lands to creditors, and can therefore obtain no capital to borrow, to lay out in improvements. They have, indeed, no interest to make more permanent improvements, than what would readily repay both interest and capital, during the uncertain tenure of their own life; and their interest in improvement, from that of perpetual proprietor, is thus made to dwindle down to that of mere liferenter. Their obvious interest is, to take every thing from the land that it will yield, and to render nothing to it that they can withhold, in order that they may save a provision for younger children; or, perhaps, the *only provision* for any of their children, if, by default of male heirs, the estate passes by the entail to another line. It is not easy o conceive any constitution of the holding of landed property, more completely calculated to damp, or rather, totally to extinuish the spirit of improvement in the proprietor, unless that which is said to take place in Turkey, where the Sultan is the ole heir to the property of his subjects.

To such an absurd height has the will of deceased entailers een allowed to militate against all kinds of improvement, that, y the law, as it was interpreted, entailers could, and even often d prevent, their lands from being properly let in lease; ‡ although, where a strict entail is executed, long leases are evident- the only measures remaining to communicate, anywhere, an rest in the permanent improvement of estates locked up unentail.

Smith's Wealth of Nations, Book III. Part i. Chap. 2. He supposes, ps, one-third of the lands of Scotland to be held under strict entail: and tremely probable that the proportion has increased since his time.

his is the limit of the power of entail in England, according to Paley. *and Political Philosophy*, Book III. Part i. Chap. 20.

reamble to act 10th Geo. III.

The immoral effect of entail, in emancipating the future heir, so soon as he is capable of being conscious of the independence of his situation, from all control of parental authority, is certainly deserving of most serious consideration, although it falls not properly to be treated of in a work of this nature. (See *Kames's Sketches*, vol. iv. Appendix.)

The ruinous effects of the statute of entail, in authorising entailers so to fetter their successors, as to deprive them of all interest and inclination, as well as capacity, to improve, had arisen to such an height, during little more than fourscore years of its operation, that, in 1770, a statute (act 10th Geo. III.) was applied for and obtained, granting some little relief from those absurd shackles which it had imposed.

In regard to improvements suited to the proprietors, (which fall here to be considered), the possessing heir is, by this statute, allowed to lay out money in *permanent* agricultural improvements, (such as planting of wood, inclosing, draining, building of farm-houses), which are not supposed fully to indemnify a liferenter by their return; † and to constitute himself a creditor against the succeeding heirs of entail, for the money so laid out, to the extent of four years free rent of the estate, as the rents shall be at the term of such successor's entering into possession; provided such proprietor charges only against his successor three-fourths of the expenditure he himself has actually made; provided, also, that the successor shall not be obliged to repay, in satisfaction of the claim, above one-third yearly of the free rents he receives; and if he dies before the debt is thus extinguished, the residuary claim extends, in like manner, to the next succeeding heir, who is liable in the resting balance. Provision is also made, to make the possessing heir, creditor on his successor, for building, or repairing, or adding to the mansion-house, to the extent of three-fourths of the money so expended; but that he shall, in like manner, not be creditor, upon this account, to above the extent of two years free rent of the estate, the possessing heir being liable in a third only of what rent he draws. Provision is also made, for executing exchanges of land, (which may so often be of advantage to the most profitable occupation of the lands betwixt which these interchanges are made), to the extent of thirty acres of arable, and of one hundred of hill land, unfit for the plough. To this extent exchanges are limited, in transacting with any one conterminous proprietor; but there are ways of creating conterminous proprietors, by fictitious sales, which, though a roundabout and expensive way, may nevertheless render the latitude of the act tolerably sufficient for all purposes of profitable exchange.

---

† It is doubted if liming of land, or any plough-culture on wastes, is considered as one of those permanent improvements of too distant return to repay the possessing heir.

Considering the minute attention requisite to all the forms prescribed in this act, in order to constitute the charge, and the rather unready mode of obtaining repayment, when the charge has been constituted, with the chances of forfeiture, through the omission of any of the forms, the act seems not very greatly encouraging to the improvements that suit the proprietor.* Accordingly, the framers of this act seem to have considered, that inclosure at least, (probably then considered as one of the most important agricultural improvements), was rather to be expected from tenants upon lease, than from possessing heirs of entail. And in consequence, in the latitude given by this statute, as to the endurance of leases, the burden of inclosure is devolved upon the tenant, on the well grounded fore-thought, that, if not executed at his expense, there was but little probability of their being ever executed at all. If the lease, therefore, shall extend to the lives of two persons designed, or to the specific period of thirty-one years, (which seem considered, as equivalent durations) it is provided, that the tenant shall inclose, in a sufficient and lasting manner, the whole of the lands so leased to him, withi thirty years; that is, one-third in the first ten years, two-third in twenty years, and the whole within thirty. Leases of tha length of endurance are, however, seldom or never accepted by tenants from entailed estates; whether that the term is co sidered as too short to reimburse the expense by its profits; whether the inclosure specifically required, may not often prov were it executed, too expensive, to be compensated by any a vantages derivable from it. *

---

* The possessing heir of entail may make the next succeeding heir his debtor, to the extent of four years rent for agricultural improvements, and two years rent for the mansion-house; or in whole for six years rent.

But he himself must have actually laid out equal to one-third of what he charges, as he can only render the next heir debtor for three-fourths of what he has actually expended.

Supposing, then, he constitutes a debt against the next heir for six years rent:—he himself, in order to be so entitled, must have expended eight years rent; but the next heir can only be obliged to give up one-third of what he receives yearly, *i. e.* the creditor can only recover 1-24th part of his capital expended, or exactly 4 1-6th *per cent.*, as the only fund for both the payment of interest, and redemption of his principal. Suppose, for instance, a possessing heir constitutes a debt of 2000*l.* for the mansion-house; as he can charge only three-fourths of what he has expended, he must have expended 2666*l.* 13*s.* 4*d.*; let him also constitute a debt of 4000*l.* for land improvement, and he must for this purpose have in like manner expended 5333*l.* 6*s.* 8*d.* He dies, and the estate, at the entry of the succeeding heir, is rented at 1000*l.* a-year: He has thus, then, legally constituted a debt against the estate to the full amount allowed by the law, viz. Two years rent for the mansion-house, and four years rent for land improvement, or in whole a debt of 6000*l.*; but for this purpose he was obliged actually to expend 8000*l.* The next heir, however, is not obliged to pay more than one-third always of the rents which he draws: He therefore pays one-third of 1000*l.* yearly, or 333*l.* 6*s.* 8*d.*; which annual payment is exactly 4 1-6th *per cent.* of the 8000*l.* actually expended.

If the first heir, as debtor, continues to live, he would pay off the debt legally constituted of the 6000*l.* in the space of forty-three years and a fraction, by the surrender annually of the third of the rents as they were at his entry, or paying 333*l.* 6*s.* 8*d.* annually, which is all he can be obliged to: and no fresh debt can be contracted, until the first contracted debt shall be extinguished. No doubt, if the first succeeding heir shall die before the expiry of the forty-three years, and the rents should have risen before his death, the debt may be sooner extinguished, as his successor may be compelled to pay one-third of the rent annually as it was at the date of his entry.

The third of the rent paid by the possessing heir being the only attachable fund, the recovery must always be the more slow, in direct proportion to the liberality of the outlay.

Mortmain is a device for giving a perpetuity to a continu succession of transitory interests in land. It is accompani with all the deleterious effects of entail. It is, in so far, even worse constitution of holding imposed upon land than entail, that it can have no termination; whereas the provision of entail may cease, in the course of ages, after all that has been preconceived and provided for has come to an issue.

Where the administration is vested in those bodies corporate who derive the benefit, we may infallibly expect just such measures as are calculated to yield most immediate profits to the constituent members, upon their transitory interest. Like possessing heirs of entail, *under many supposable circumstances*, they will uniformly find an interest in taking from the land every thing that can be squeezed from it, withholding every thing of the nature of improvement that does not make an instantaneous return.

Where the administration is in disinterested hands, for the behoof of others, the same anxiety to make the most of a transitory interest, will not operate: the misfortune only will be, that improvement will not be stimulated by the lively sense of personal interest, but become a merely gratuitous exertion.

There are specimens of mortmain in Scotland under each constitution of administration, but to no great extent.

---

* If it is considered as essential, that Nobility should attach to matter, and not to mind, and that it should be perpetuated by its permanence in lands continued in the possession of individual families, rather than by fresh issues of personal creation from the perennial fountain of honour, such a reason may justify, perhaps, the unalienable attachment of the family estate to the male representative, though at the expense of beggaring all the other members,—lest his poverty should make his nobility become ridiculous; and yet, in England, the matter would seem left much more to the discretion of individual prudence, without sensible inconvenience.

But it is surely unbecoming the wisdom of the Legislature, to suffer every individual, from his own whim and caprice, to lock up his land, to perpetuity, from commerce, making it stagnate, for generations, in hands which he has incapacitated for improvement by the fiat of his will. If the lands are considered as constituting the great capital of the nation, it wears absurdity on the face of it, to suppose that any individual should be entitled thus to condemn it to a state of comparative sterility. To withdraw support from entail, would be preferable to any palliative administered to such a rotten constitution.

The glebes of the Clergy, consisting of from six to eight acres ch, and amounting perhaps to from 6000 to 8000 acres of land on the whole, constitute probably the greatest amount of Scots ds held under mortmain. Though they are placed under the st mentioned, and worst species of administration, yet, as the ergy in country parishes, who alone have glebes, find it neces- ry, (for the accommodation of a riding horse, carriage of fuel, c.) to retain their glebes in their own personal occupation, they e stimulated by example, and to avoid loss of reputation. ithin this half century, from their superior intelligence, they re held as models of farming, notwithstanding of their interest ing merely that of liferent. Their farming does not now make ch a distinguished figure.

Of Holding of Land upon temporary Tenure.—Of Lease,[*]*— as Alienable, or Personal,—under Restriction, or Free Management.—Burdens.*

THE *tenure of lease* comes to be a matter of primary import- ce to agricultural improvement in modern times, when, from e consuetudinary law of the preference of primogeniture, and e instituted policy of entails, (constitutions utterly unknown the Romans), the lands, instead of crumbling down, in the rtition of succession, or in the varieties of alienation, have a dency to accumulate into, and to be retained in such masses, are too large for the personal occupation and superintendance the proprietor, making it, of course, more for his interest, to re out their use, than to manage them himself.

Upon the downfal of the Roman Empire, it seems to have been e universal policy of the barbarous invaders, to divide the con- ered lands into large estates, among the different leaders of the rious tribes; and as these chieftains yielded a very limited sub- ission to any common sovereignty, each estate constituted, in great measure, within itself, an independent principality: its ength depended on its extent, and its unity and indivisibili- were enforced by obvious necessity, in the same manner as se have come to be considered as fundamental laws of monar- ies. The original inhabitants were very probably, in general, duced to the state of the Helots among the Lacedemonians. he chieftain would cultivate what part of the domain he retain- l in his own immediate possession, by means of such slaves. he produce would be consumed in the only way in which, pre- ous to the introduction of arts and manufactures, it could be nsumed, by feeding the numerous military retainers of the hieftain in his halls; assigning to others, upon mere quit-rents, portions of his lands lying at greater distances; or in other wor maintaining in their own houses, those retainers or soldiers w could not be contained within the walls of his castle.

---

[*] The discussion on leases more properly belongs to the 4th Chapter; but the servations contained in this paper, on that subject, could not well be separat- l from the rest; and the subject is of such essential importance, that it can- ot be too frequently discussed, or too amply illustrated.

The first species of the immediate cultivators of the soil, u der the head chieftain and his subordinate retainers, seem to ha been slaves. But as a slave, incapable of acquiring proper can have no possible interest but to eat as much, and work little as he can, it must soon have obviously appeared for the terest of the master, to communicate an interest to the slave his own labours, by admitting him, (like the Roman *Coloni p tiarii*), to a share of its products; the proprietor then advan the stock, and the villains, now emancipated and capable of quiring property, shared the one-half of the produce, (like *Metayers* of France, or ancient *Steelbow tenants* of Scotlan restoring to the proprietor, at their quitting the lands, or bei ejected, the cattle, utensils and seed corn, which they had ceived from him at entering to them.

Under such a constitution, it might be for the interest of t metayer or steelbow tenant, to cultivate to such an extent as cou be done by the stock advanced by the master;* but it would as evidently inconsistent with his interest to fix, in land improv ments, any part of that stock which had accumulated in his hand from the savings of his copartnery, unless he was assured of t secure possession of the land, for such length of time as mig afford him a reasonable prospect of withdrawing, in its annu returns, the stock he had sunk in improvements, together wi its interest, and a proper compensation for risk and troubl Such views, therefore, would lead to the adopting of a certa period of holding, and of a fixed rent, over and above whic the whole produce should be the tenant's own.

Thus the obvious interest of the parties concerned, would con to improve the condition of the actual cultivator, from a state absolute slavery, to that of the steelbow tenant or metayer, a from that, to the present state of the farmer, properly so called *occupying for a time certain, and at a rent certain, and farmi entirely upon his own capital, and at his own risk.*

The interest of the sovereign, in the various European m narchies, concurred to accelerate this natural progress, in th raising up an independent power, with which it might unite, cope more successfully with the overgrown power of the feu aristocracy.

Such is the most plausible theoretic history of the lease, cording to Dr Adam Smith and Lord Kames.

In England, it would appear, that the great security comm nicated to the tenant, was not merely the protection of his lea but the extension of the right of franchise,—a security which is found sufficient, it is said, to supersede altogether the security of the lease. *

---

* And yet, if a tithe of the gross produce is considered justly as a great couragement to production, the tax of one-half must be much more so.

No such extension of franchise having taken place in Scotland, the security of the Scottish farmer, necessary to excite him to industry and outlay of his capital, must rest entirely upon his lease.

The *Magna Charta* of the Scotch tenant's security, is the act of the Scots Parliament 1449, under the reign of James II., which secured the tenant in any length of lease, against any one whatsoever in whose hands the property might come to be vested, whether heirs or purchasers; by either of whom, it would appear, he might formerly have been ejected, his right having been considered rather as a *personal right*, good against the possessing proprietor who had granted the lease, than as a *real right*, establishing a lien upon the land itself. The subsequent act 1469, freeing him from being answerable for the debts of his landlord, (with whom he had before been identified), excepting in so far as he himself should be indebted to his landlord in rent by his lease, entirely completed his security.

A short-sighted avarice, defeating its own intention, might still, no doubt, have led illiberal minded proprietors to grasp at the profits of improvement, by such extreme short leases, as should deprive the tenant of every rational inducement to make them. These enactments had, however, given complete sanction to every contract of lease, of whatever length of duration might be thought proper, to give the tenant an interest in the most liberal outlay of his capital, and upon improvements of the most permanent duration. The Legislature had done every thing that was proper for the Legislature to do in this respect, for encouraging agricultural improvement. The rest was left to the common sense of interest in the parties.

Unhappily, however, the baleful entail act of 1685, put it in the power of every particular individual, possessed of land, entirely to defeat, as to his own property, the liberal intentions of these beneficent acts, by enabling him to force upon the adoption of all succeeding generations, which he was capable of preconceiving to exist, his own particular views, however illiberal and unenlightened. And as dogmatic obstinacy and presumption are generally proportioned to the degree of narrow-minded ignorance, there was danger to be apprehended, as the lands might successively fall into the hands of such illiberal minded proprietors, that the whole lands of Scotland might, in process of time, be doomed to a state of comparative sterility and waste. In fact, it would appear, that, during the first period of eighty-five years after the operation of this act had commenced, so much land had been placed under this most absurd constitution as to the power of leasing, (restricting leases to very short periods, or debarring all leases for more than a single year), that this *daily-increasing mischief** called loudly for the interposition of legislative redress, and the palliative statute already mentioned was obtained.

---

* The acknowledged superiority of Scotch agriculture, would, however, seem to show the preferable security of the lease, unless we are to conclude, that industry becomes vigorous, in proportion to the struggles it has to maintain with those natural disadvantages which it is its province to overcome.

As the latitude of that statute, of thirty-one years lease, is never almost embraced by Scots tenantry, for the reasons already assigned, the only relief, as to the power of leasing, is the granting to the possessing heir, the power of letting leases, (without imposition of any conditions on the tenant), for fourteen years and one life, or for nineteen years, held, it would seem, as equivalent durations;—a period by much too short to admit of a proper recompense to the tenant, for any considerable improvement, arising from expensive outlay, from the expectation of distant return—a description applicable to all the most important parts of agricultural improvement.†

The statute, indeed, confirms every latitude already existing in entails, although they should contain, either expressly or by implication, more ample powers to grant leases, than what are given by this statute itself. But here, too, the genius of the Scotch law, at least as formerly understood, discourages that length of lease, which would be necessary to give the tenant an interest in improvements of expense and permanency, by the shortness of the endurance of the lease, which, in construction, it confounds with that *alienation* which the entail prohibits. If the entail, then, is entirely silent as to length of leases, the question comes to be, What length of lease is, in legal construction, to be held equivalent to alienation? Whether, like our old law writers, (who seem to have known little of the means by which a spirit of improvement might be excited), we shall hold a ten years lease as a *quasi* alienation, or extend the period to ninety-nine years, *when*, according to common calculation, an annuity comes to be of equal value with a perpetuity?‡ Or, whether we shall fix on some intermediate period? Or, if so, by what rule it shall be fixed? Or, if the entail, whilst it debars alienation, shall positively grant a latitude of leasing, to a greater extent than what shall fall under the denomination of *quasi* alienation, (supposing that point to be settled), whether the clause debarring alienation shall be enlarged in its interpretation, to correspond with the given latitude of leasing; or the given latitude of leasing be curtailed, within the period which is legally constructed into alienation?

---

* Epithets applied to it in act 10th Geo. III.

† In France, twenty-seven years leases were supported by law; though *there*, as climate does so much, there is no such urgent need of stimulating industry by superior length of lease.

‡ These are debateable points, in regard to which, it is to be hoped, a general decision will be given, in the cause at issue between the Earl of Wemyss and the tenants on Nidpath, and executors of the Duke of Queensberry.

The *jus delectus personæ*, in regard to his tenant, supposed in the eye of Scots law a necessarily inherent right in the landlord, tends equally, as the policy of entail, to damp, in the tenant, the spirit of liberal improvement, by depriving him of the proper security he should possess, of reaping the fruits of his industry.

Though intended for purposes so extremely different, the holding of lands in lease, for agricultural purposes, has been forced, most incongruously, into the analogy of a land benefice for military service; and the law maxims applicable to the latter, have been preposterously applied to regulate the interpretation of the constitution of the former. It has fared better, however, with the military benefice, than with the tenure of the cultivator of the soil; for whilst the former, from being held at will, came, through consuetudinary law, to be held for life, then as descendable to heirs, and at last in full property, with complete right of alienation, whether *inter vivos* or *mortis causa*, the legal construction of lease stopt short, in its being made descendable, by succession, to heirs-at-law. Unless, then, when the lease is of length of endurance, exceeding so far the probability of the life of a person of age to enter into a contract of lease, as to preclude the legal supposition that the proprietor preferred the tenant out of a predilection for his person,* the tenant can neither alienate it, nor dispose of it by testament, or will, nor can it be compulsorily alienated from him to satisfy his debts.

Nothing can be conceived more calculated, under many supposble circumstances, to discourage the Scots tenant from sinking pital upon the improvement of lands held in lease, than these surd constructions of Scots law, which may virtually reduce his terest in his lease, to the mere precarious tenure of a liferent, so tle favourable to improvement.

The constitution of the lease is matter of private legislation, as ll as of legal construction; and as *pactio tollit legem*, the land-proprietor has it in his power to emancipate the lease from e fetters of feudal barbarism, by expressly renouncing his *jus ctus personæ*, and giving the tenant full power to alienate or

---

By a very late decision of our Supreme Court, if the lease is only for en- ce of nineteen years, the proprietor's *jus delectus* is presumed to be re- l. By other decisions, an endurance of thirty-one years makes the pre- ion that it is renounced. The intermediate endurances are a debateable d, for the regulation of future decisions. If the lease of the land is by public roup, or, as is more common, by secret roup, in taking in offers, *quære*, Whether, according to the analogy of feudal law, this ot legally to infer renunciation of the *jus delectus*?

dispone his lease; and, considering the obvious expediency of such a measure, it is not a little surprising, that, even at this day, instead of renouncing the legal construction, it should be very commonly still farther confirmed, by express clauses excluding subtenants and assignees, legal or voluntary. The truth, indeed, seems to be this:—Professional lawyers are generally employed to draw up contracts of lease; and, having their imaginations preoccupied by feudal ideas, suggested in the course of their Scotch law studies, they may have got into the habit of considering the *jus delectus*, as an appendage essential to the landlord,—perhaps as reflecting upon him somewhat of the glare of ancient feudal baronial dignity; and both landlord and tenant may have accustomed themselves to consider such clauses, as the mere technical pleonasms of legal verbosity. Whilst tenants, too, continued to be possessed of little, either of skill, capital, or industry, they might care the less for the power of disposing a subject, in which they had no view of fixing much of their own property; nor could the landlord's avarice be much tempted to evict a forfeiture, upon the assignation of a lease, where no improvement had been made upon the farm, to yield a profit to him upon reletting. The late unprecedented rise of rents seems, however, to have awakened the cupidity of some landholders; forfeitures of the lease have been pursued, where the *jus delectus* had been violated by assignation; and tenants have been taught, to their cost, no longer to consider such clauses as unmeaning expletive formalities.

The lease being the only security possessed by the Scots tenantry, to encourage their industry, the constitution of it comes to be a matter of the first moment. And as many Scots landed proprietors, and particularly their business men of the law, seem to adhere with obstinacy to a blind prejudice in favour of the retaining of the *jus delectus* on the part of the landholder, it may be proper to illustrate more particularly its discouraging influence upon agricultural industry.

And, *first*, It may be obſerved, that it is almoſt entirely deſtructive of agricultural credit. There ſeems no reaſon why a monied capitaliſt ſhould ſcruple to lend his money to be launched out in feaſible ſchemes of profitable agricultural improvements, any more than upon manufacturing or mercantile ſpeculations, if only the creditor had equal facility of attaching the leaſe of the debtor, to be ſold to the beſt bidder, at its improved value, as he has to attach and diſpoſe of the poſſeſſions of the manufacturer or merchant. Unleſs, however, the *jus delectus* be poſitively renounced, (in a nineteen years leaſe, and whatever other periods ſhall be decerned to lie under its influence, from nineteen to thirty-one years), the creditor cannot attach the leaſe. A device, indeed, is attributed to the late Advocate Lockhart, (afterwards a Lord of Seſſion), by which the *jus delectus* was evaded, by enabling the creditors to place a factor or manager in the farm; but by a late ſolemn deciſion, after a mutual conſultation of the Two Diviſions of our Supreme Court, the appointment of a factor was found a contravention of the clauſe debarring aſſignation; and ſuch a reſource would be juſt as nugatory, for the purpoſe of eſtabliſhing agricultural credit, as if the law were to ſay to moneyed men, in regard to their ſecurity upon their mercantile or manufacturing debtors:—*You ſhall not be allowed to bring to the hammer their ſhips, their machinery, their warehouſes; but if you chooſe it, we ſhall allow you to take poſſeſſion of theſe, and to continue their trade, till ſuch time as you ſhall have reimburſed yourſelf by your own ſucceſsful management.* Such, however, is the ſhort-ſightedneſs of avarice, that Scotch leaſes are ſometimes even at this day, conſtructed with the abſurd condition inſerted in them, in reinforcement of the *jus delectus*, that the bankruptcy of the tenant, ſhall infer an irritancy of the leaſe, and ſhall cauſe the land inſtantly to revert to the poſſeſſion of the landlord; thus precluding any ſort of interference of creditors for their intereſt, and entirely defeating their claims.

But, *ſecondly*, Suppoſing the tenant to have abundance of capital of his own, the retention of the *jus delectus* may, in many very ſuppoſable ſituations, deprive him of every rational inducement to fix his own capital in improvements of the farm, even though the period of duration of the leaſe, ſhould allow him otherwiſe the faireſt proſpect of reaping abundantly the fruits of his outlay, through the medium of the moſt expenſive and moſt permanent improvements.

Though the *jus delectus* prevents voluntary alienation and diſpoſal, and compulſory alienation at the inſtance of the tenant's creditors, it hath not been carried to that extreme of abſurdity, as to prevent the leaſe from deſcending to the tenant's heirs; it deſcends, however, to his natural heirs by ſucceſſion, not to ſuch as he might be inclined to nominate; in other words, it is entailed upon thoſe whom the law has deſigned his heirs; and he is deprived of all power of choice. But ſuppoſing the tenant has no children, and that his legal heirs are ſuch as he regards not, or hates, either with or without reaſon, is it in human nature to ſuppoſe, that, with the probable proſpect of dying during the currency of a leaſe, of ſuch length of endurance as to give proſpect of repayment for improvements of expenſe and permanency, he ſhould fix his capital in the ſoil, to be carried off, along with the leaſe, by heirs of this deſcrption? Will he not rather retain it as much as poſſible from outlay on ſuch improvements, that he may keep it under his own command, to be diſpoſed of as he pleaſes? Or, ſuppoſing he has ſons, he can make no choice among them: the eldeſt ſon is legal heir to the tack. But in a leaſe of ſufficient endurance for any material improvement, the ſuppoſition, having moſt probabilities on its ſide is, that the eldeſt leaves the family, not chooſing to keep himſelf diſengaged from employment in view of ſucceeding to his father's leaſe. He may have become merchant, or manufacturer, or may have ſettled in a diſtant farm in England or Ireland. If the father dies, he cannot bequeath it to any other ſon, who may have remained with him, to aſſiſt him in his labours; the heir, and the heir alone, can take up the leaſe; he muſt either occupy perſonally, or in the unprofitable mode of a manager, acting entirely at another's riſk, and having no further perſonal intereſt in the management, than merely to avoid forfeiture of his wages, through the groſſeſt negligence or diſhoneſty.* But either of theſe alternatives might prove ruinous: He is obliged, therefore, to relinquiſh the leaſe to the landlord, to whom it would indeed revert as a forfeiture, were he to attempt diſpoſing of it to the higheſt bidder. If he has only daughters, by the Scotch law of heritages they would ſucceed equally as heirs-portioners, with ſmall proſpect, indeed, of the farm turning to any account either under diſcordant management, if they jointly occupy, under the delegated management of a manager, acting without riſk of his own: But as they cannot ſell, there is no alternative but throw up the leaſe; not to mention, that, according to feudal notions, it may be doubtful, whether the marriage of a daughter without conſent of the proprietor, might not infer forfeiture, as placing the leaſe under the *jus mariti*, and of courſe being equivalent to an aſſignation. If the tenant, too, ſhould leave none behind him but helpleſs infants, of what avail could it be to them, to occupy the farm by ſervants or a manager, whom they are incapable of calling to account? If not allowed to ſell the leaſe to the higheſt bidder, it muſt be relinquiſhed.

But further: Suppose the tenant wishes to quit his farm, for want of health,—or to betake himself to some other profitable profession,—or to take lands in lease in some distant unimproved district, where, from want of competitors, his superior skill would be amply rewarded, and his example might also prove useful: He cannot, like an unfettered manufacturer or merchant, withdraw his capital, by disposing of his present concern to the best bidder: He must either remain where he is, as an *adscriptus glebæ*, or necessarily trust to the remiss management of servants, (if, indeed, he is not bound to actual residence by his lease); for he can neither withdraw his capital, by assignation; nor subletting, by *grassum*, (fine at entry), given at once; nor gradually, in shape of over-rent.

Partnerships, too, so convenient in other professions, where different talents could be combined to mutual advantage, are not admitted in a lease thus fettered as to its free disposal.

In this manner, through the legal torturing of the contract of lease into a most unnatural conformity to the original tenure of military benefice, and the prevalent absurdity of acting upon, instead of counteracting this legal tendency, in the terms of private bargain, agricultural credit is diminished, and much capital banished from agricultural improvement. Under such circumstances, it is ridiculous to hear landed proprietors complain of the reluctance of tenants to lay out money upon improvements. Their tenants must be cast in a mould different from what is common to other men, if they employ much industry or capital where there is such insecurity of reaping the fruits of such application, and where capital, once launched out, runs such risk of eventual forfeiture.

---

* Indeed, by a late decision (see note, p. 241), he is precluded from this miserable resource.

All schemes of catching at the profits of improvement, by circumscribing the lease to such short duration, as deprives the tenant of interest in making them, and all schemes of snatching at the capital fixed in the soil, in taking chances of intermediate forfeiture, by retaining the *jus delectus*, are childish in the extreme, and must ultimately prove *felo de se*, like the killing the hen, to get at once at her eggs, or the cutting down of the tree, to come at once at its fruit.

The landholder and his tenant may be considered as joined in a copartnery, the landlord being the dormant, and the tenant the acting partner; and it is not to be supposed that the copartnery can flourish, but in proportion as both are alike admitted to advantages, and the acting partner in particular.

The substitution of enforcement by penalties, to a sense of interest, is similar to the substitution of the labour of slaves, extorted by the lash, to the labour of freemen, paid in proportion to the work they perform. It suits, however, the indolence, the ignorance, and domineering spirit, in which too many would wish to indulge, to attempt to compel by force, rather than condescend to persuade.

The law might be altered to much advantage, and without the smallest inconvenience. Much is within the private power of landholders themselves; and nothing bids fairer to make common sense prevail upon any subject, than a liberal and fair discussion.

A law declaring every lease the full and complete property of the tenant, alienable and disponable at his pleasure, would be of the greatest importance to encourage liberal minded capitalists to betake themselves to farming, and would establish credit, to make it practicable to borrow money on the security of the lease; whilst the dependent, and of course the degraded state, in which the tenantry are too often kept, makes men of spirit and enterprise, disdain so servile an occupation.*

---

* If a landholder, or rather his man of business, is aware of the chances of eventual forfeiture in constructing the lease, and at the same time is convinced, (as he generally may be), that the tenant has not had the same foresight, one would certainly be disposed to condemn such a bargain as fraudulent. A declaratory law, as above, rendering every lease full property, unless where the contrary were expressly declared, would prevent all such fraud. If the tenant accepts a lease with clauses of forfeiture expressly declared, he has himself alone to blame.

Your *reaſoners from practical experience*, as they deſign themſelves, will allege, that as agricultural induſtry is ſeen to thrive in Scotland, ſuch allegations of exiſting cauſes of its depreſſion, are merely theoretical and illuſory. To ſuch the only reply is, an appeal to the *internal conſciousneſs* of every one capable of thought and reflection.

Indeed, conſidering the ſmall chance of raiſing a fortune in this profeſſion, in compariſon of what we ſee every day realized by merchants and manufacturers; habit, or the pleaſures of a country life, can alone account for agriculture retaining much capital in its employment.

Preſcribed rules of management, depriving the tenant of all liberty of action, treating him as a mere machine unentitled to think and condemning him to one undeviating round, like a blind horſe in a bark-mill, have the ſame degrading effect, baniſhing from the profeſſion every man of high ſpirit and enterpriſe, to thoſe mercantile or manufacturing employments, where he is at liberty to diſplay the energies of his own mind, and to act as a man.

The moſt that can be ſaid for preſcribed rules of management is, that they may prevent the beſt known ſyſtem at the time from degenerating. But they have juſt an equal tendency to prevent *all* farther improvement. In early times, when the condition of the tenantry was in a ſtate of greater degradation than at preſent, it was not to be expected, that much information ſhould prevail in that claſs, or that material improvement ſhould ariſe in that quarter. *Now*, however, from the greater liberality which has prevailed in the terms of private bargain, with the tendency long ſhown to a liberal conſtruction of law in favour of the tenant's ſecurity, ‡ the Scotch tenantry, have been advanced to an higher rank in the ſcale of ſociety; and, in an age of ſuch extended intercourſe and communication, there is no deficiency of information in this claſs, nor that bigotry to eſtabliſhed practice, which is the offspring of ignorance; ſo that in many improved diſtricts, the tenantry may be conſidered as much more fit to direct the proprietors, than to be directed by them. In ſhort, for a conſiderable time paſt, there ſeems to have been no prevalent deficiency among Scots tenantry, either of ſkill to contrive, or of capital to execute; inſomuch, that where farms become vacant in diſtricts where improvement is leſs underſtood, the rents offered by tenants from more improved diſtricts, upon the credit of ſuperior returns from a better ſyſtem, muſt either diſlodge the preſent occupiers, or force them to adopt that better ſyſtem, without which they could not afford equal rent. For though the liberality of the proprietor might lead him to give a certain degree of preference to the preſent poſſeſſors, there are certainly limits, beyond which their expectations of a ſacrifice of pecuniary intereſt in their favour would be unreaſonable. There is thus a natural ſecurity for the ſpread of every real agricultural improvement, if not prevented by abſurd regulations of management: *A more productive system will lead to offers of higher rent; and higher rent, must enforce the adoption of this better system.*

---

‡ Since the alarm of the French revolutionary spirit, some seem to think, that a retrogradation in this respect has taken place.

Through the currency of the leaſe, the intereſt of both proprietor and tenant muſt evidently concur in the ſame meaſure, of rendering the land as productive as poſſible. There is a period, nevertheleſs, towards the cloſe of the leaſe, in which theſe intereſts begin to diverge; and therefore, reſtrictions as to the laſt three or four years may be neceſſary to keep the tenant to the mode of management, which his own intereſt would effectually bind him to obſerve during the currency. During theſe years, a management may be properly enforced by penalties, correſponding to the ſyſtem underſtood as the beſt for that ſpecies of farm at the commencement of the leaſe. But as it were abſurd to ſuppoſe that any ſyſtem is perfect, and incapable of improvement, in order that the farm may not be debarred from ſuch improvement as may be found out during the currency of the leaſe, it ſhould be in the power of the tenant, to manage, and to leave the farm in any way he pleaſes, without incurring the penalty, provided he can make it appear, to impartial arbiters, that the farm, in the condition in which he leaves it, is in no worſe ſtate than it would have been, had the management preſcribed in the reſtricted years been obſerved.

To avoid this unimproving period, when the tenant may conceive it for his advantage to draw as much from the land as it can yield, rendering nothing to it that he can withhold, it might be of uſe (at leaſt on ſuppoſition of the poſſeſſing tenant being preferred), to renew the leaſe three or four years before the expiration of the exiſting one; the entry to the ſecond, to commence at the termination of the firſt. As, however, a leaſe, to be effectual, muſt, in conſiſtency with the maxims of Scotch law, be *clothed with possession*, it is uncertain if, without an expreſs alteration of the law, ſuch a leaſe would be good againſt a ſucceeding heir of entail, or even a purchaſer, if either came to be veſted in the property, before the expiration of the current leaſe. *

The late Lord Kames, whoſe original comprehenſive and verſatile genius was well calculated to throw light upon every queſtion which he made the ſubject of his inveſtigation, and who was probably the firſt agricultural writer who paid much attention to the *moral excitements* of agricultural induſtry, was well aware of the futility of the ſubſtitution of enforcement, under penalty, to the tenant's ſenſe of his own intereſt. To impart, therefore, to the tenant a continual and unceaſing intereſt in the improvement of his farm, he fell upon the contrivance of the perpetual leaſe, by which the tenant was either ſure of a preference at releaſing, or elſe of a certain number of years' purchaſe of the advanced rent offered by himſelf. Here, however, as elſewhere, the abſurd policy of entail, would prevent the adoption of ſuch a ſcheme of improvement, as no obligation to this effect, granted by a poſſeſſing heir, would, in any probability, be held valid againſt the challenge of the ſucceeding heir. The only objection againſt ſuch a conſtitution of leaſe ſeems to be, that the farm muſt continue for ever of the ſame conſtruction as to ſize, &c. however inconveniently arranged in ſuch reſpects, without conſent of both parties, though mutual conſent to alteration, if obviouſly fitting the farm for more profitable occupation, might not be of very difficult attainment.

---

* As it would be highly inconvenient that leases of this kind should be absolutely invalid, our Courts have decided, that such a lease is valid, if granted *in the ordinary course of administration*: The length of term seems not, however, fixed. The framers of the act 10th Geo. III. seem to point at one year previous to the expiration of the current lease.

Restrictions as to management ought ever, at all events, to be clearly and explicitly expressed, otherwise the tenant must be kept in a most discouraging state of perpetual uncertainty. The reporter of East Lothian observes, that the vague obligatory clauses, binding the tenant, in general terms, *to practise the rules of good husbandry, and not to mislabour the farm*, have, in that quarter, given rise to many most unprofitable lawsuits. The various acts of Parliament freeing the tenant from every prestation, unless what he has expressly stipulated to perform in his lease, might seemingly have rendered all such unspecific clauses of obligation, unactionable before a court of law. It would appear, however, that they are held actionable. And this being the case, many questions of course may arise as grounds of litiscontestation: As, *first*, What is to be understood as rules of good husbandry? It is to be understood, according to what may be reasonably supposed to have been conceived to be good husbandry by the parties at the time of entering into the contract, or as what may come to be considered as good husbandry during the currency of the lease? If the latter ambulatory interpretation shall be fixed upon, may not the tenant, at any time, be interrupted by the landlord in his proceedings, till it shall be determined whether what he proposes to do is good or bad husbandry? which, probably, may not be decided, till the season for performance has elapsed.* As it is probable few landholders would thus choose to intermeddle in teazing the tenant in every step of his proceedings, through the whole of his lease, it is probable that the question of what constitutes good or bad husbandry, might not be agitated till towards its close. And here, supposing the point as to the constitution of bad or good husbandry to be indisputable, still a *second* question might arise,—Whether the point of good or bad husbandry, had been settled in the general opinion, in such time, that the tenant should, in equity, be considered as bound by his obligation to have adopted the improved practice? For a practice in husbandry is not, in reason, to be held as an improvement, merely because it is an innovation; good sense requiring, in this as in other subjects, a renitency against hasty change: And as there is, of necessity, a certain loss always to be sustained in the disarrangement of one system, in preparation for the introduction of another, it may be that the tenant's lease was too near to its expiry, (by the time that he might be supposed apprised of the better system), to allow of reaping, from the practice of that system, any adequate compensation for the loss to be sustained in the preparation for its introduction. At any rate, as all questions of this nature must ultimately be remitted by law courts to arbiters, wherever such a vague clause of obligation is admitted, it ought to be accompanied with another, binding both parties, to submit any dispute that might arise upon it, at once to arbiters mutually chosen.

---

* So different are the prevailing ideas of good husbandry, that Scotch tenants, who took in lease farms in England, at high rents, in view of rendering them more productive by alternate husbandry, were interrupted in breaking up old grass lands, by eventual heirs of entail, upon the footing that this was committing waste upon the estate. *See Farmer's Magazine.*

The security of lease has been every where, through Scotland, the *primum mobile* of superior improvement.* The total want of that security is almost nowhere complained of, excepting in the Highlands of Scotland; and where the proprietors, out of mere humanity, and at the expence of great sacrifices of their own pecuniary interest, are still continuing upon their lands, (till they can dispose of themselves otherwise), that disproportionate population, for which there can be no profitable use, upon the introduction of a more profitable system of occupancy, it is not to be expected that they should entail upon themselves such an unproductive system, or give it permanency through the security of lease.†

The size of farms is of considerable consequence to their profitable occupation.

---

* Leases, and long leases, have been considered equally as the great causes of improvement in England. Caledonia, vol. ii. article Peebles-shire.

† See Lord Selkirk on Emigration from the Highlands.

His Lordship's antagonists display more of partial humanity than of enlarged views of public utility. In their zeal for supporting Highland population, some would even persuade us, that, in respect of fitness, for military service, a Highlander is of a *sui generis* description, constituting a breed of a superior kind. It is however pretty evident, that the human character is formed from circumstances, and those talents drawn forth for which there is occasion. The national reciprocated hostile incursions upon the Borders, gave a more constant occasion for hardy intrepidity and alertness, than the mutual predatory warfare of the Highland chieftains; and accordingly, the Borderers were in use to be called out to quell insurrections in the Highlands. Such specialties of character disappear upon change of circumstances. Highland regiments are now indiscriminately recruited from the common mass, and all equally acquit themselves well. A British soldier will ever act as a hero, whether Highlander or Lowlander. It may be observed however, that the hardy manner in which the Highlander is trained up, fits him for the hardships of war.

The principles that appear to regulate the size of farms, seem to be the following.

Capital will ever endeavour to invest itself in the manner in which it can yield the greatest return. Now, a considerable extent of farm, (such as to admit as much as possible of subdivision of labour, in appropriating particular classes of servants, or even of horses, exclusively to one occupation), seems necessary here, as elsewhere, to make labour most productive. In farming, too, (at least in a climate such as that of Scotland), advantage must often be taken of the state of the weather, suited to particular operations, lest the opportunity should escape: such calls require a number of hands, and these would be kept in an expensive and most unprofitable state of preparation, were not the farm of such magnitude, as to afford room for separate occupation to the whole, at all other seasons.

The competition of capital for the most profitable mode of investiture, will thus tend to the enlargement of farms to a size, the best calculated for profitable occupancy.

The same competition of capital, will also tend equally to prevent farms from stretching beyond these proper bounds, and thus to prevent monopoly. For though one man may excel another in point of intellect and exertion, the difference is very limited; the generality are upon the equal footing of mediocrity. There is an extent of farm, to the *personal management* and superintendence of which no man's energy can reach, but where he must of necessity have recourse to the uninterested, and therefore unenergetic *management of delegation*. But an interested and sharp-sighted personal superintendence, will ever be able to outbid, in affordable rent, the more languid and inefficient management of delegation. Indeed, it is upon no other footing that farmers exist as a class distinct from proprietors, but that the proprietor finds, he can obtain more *as rent*, than his lands will afford him of profit, although he pays no rent, under a management delegated to overseers, (as has been already noticed in tracing the origin of lease-holding).

Where there is sufficiency of capital to occupy and employ the whole lands most productively, the competition of capital, will thus, both enlarge farms to their proper extent, and circumscribe them within the bounds for yielding the largest production, in proportion to the labour employed: and such excess of agricultural production, above the consumption of the labourers employed in raising it, is the only fund, that can support the great numbers employed in commerce and manufactures, without raising up a population of this description, dependent upon the agriculture *of other nations* for subsistence;—not to mention the numbers of unproductive classes in the army, navy, cabinet, priesthood and forum, and those disengaged from any professional employment, who can receive subsistence from no other source but is excess, as they produce nothing of value to exchange with ther nations, for the surplus produce of foreign agriculture, which ey might receive in return.

A sort of country trading capital, will also have some little inuence upon the size of farms. As labour comes to be more nd more subdivided, in pursuance of the common sense of inividual interest, the farmer will more and more exclusively conne himself, to his proper business of a producer; merchants will ansact between him and the consumer: Professional carters nd carriers will also spring up; and these will, to a certain exent, raise such an effectual demand for minute farms, for conveiency of keep of draught horses, as no occupation, for the geeral purposes of agriculture, can contend with.

Had public legislation never interfered, in cramping the free se of perpetual landed property, by the wretched policy of entail, —and had private legislation not withdrawn, (through pride or avaice), all right of property from the occupation of lease, in debaring assignation and subletting,—the most advantageous occupany, both for individuals and the public, would ever take place, upon hat surest of all foundations, its being able to afford most profit.

No agrarian project, devised by those idlers who devote themselves to speculate for the public good, but which nobody is interested to effect, can ever possibly be realized. This observation may probably be found applicable to all those schemes of land-occupancy, which have been humanely devised for the Highlands of Scotland, in order to retain that extent of population, which can only suit a situation of landed property, such as that described in entering upon this article regarding *the holding of land upon lease.*

The legal protection of vermin, may well be considered as injurious to the agricultural industry of lease-holders.

As in the vegetable world, we account those plants which take nourishment from the soil, but which cannot be converted into human use, to be *noxious weeds*, in contra-distinction to the crops; so in the animal world, we account those animals which consume the vegetable or animal produce of agriculture, but which are either unfit for human use, or cannot be brought under the command of man, to be *destructive vermin,* in contra-distinction to farm live stock.

All game animals come under this description, as also pigeons, which, though in a state of semi-domestication, are nevertheless of a *semi-feræ naturæ:* Against their licensed depredations, the agriculturist, holding lands upon lease, enjoys no power of prevention, and he has little recourse for compensation. The game laws, obtained in favour of the monopoly of those vested with the exclusive privilege of appropriating them when they can catch them, are of similar complexion with those obtained by the manufacturing and trading part of the community, in favour of their respective monopolies.

The immediate damage occasioned by the licensed depredations of these protected vermin is, however, but of small account. ' The only damage at all worth attending to,' (in the words of the Agricultural Survey of Peeblesshire, p. 246.), ' ' that resulting from men, and dogs, and horses, in pursuit of the ' game.

' In regard to the detriment of agriculture, the very worst possible regulation, in respect of the game, would be to throw it indiscriminately open, with liberty to pursue it everywhere, to all without distinction. The very best would be, to vest in the occupying farmer an absolute power of preventing every person, without exception, from hunting over his farm against his consent. A privilege thus granted of favour, and not held of right, would never be abused, to the damage of farming stock.'

' No doubt, those privileged to hunt, are commonly in circumstances to enable them to make full compensation for any damages they may occasion, and in such situations of respectability, as would restrain them from knowingly occasioning any damage whatsoever; yet, without some such regulation, property launched out in farming, can hardly be conceived equally protected by law, as other property launched out in the business of other gainful professions To have recourse for damages, merely where damage can be legally instructed, would nowhere else be considered as a sufficient compensation for having property put in risk at the mere pleasure of another.'

' Suppose the whimsical privilege were assumed, of playing cudgel matches, for diversion, in a glass or china shop: The shopman would surely have some reason to be dissatisfied with this privilege, although he had the most undoubted security of recovering all damages that might ensue; and though, from the nature of his wares, no damage could possibly occur, in total fracture, or even mere fissure, but what could with ease and certainty be instructed. In hunting, however, for example, with slow hounds in Tweeddale, where the sheep, having extensive pastures. are naturally very wild, the mere recourse for legally instructed damage, must afford still less adequate compensation for the risk; as, from the nature of the property, much damage may be sustained, which is utterly incapable of any legal instruction;—such as, checking their progress in becoming fat, from disturbance in their pastures,—diseases consequent upon over-heating, in running through fear, or even upon fear itself. Here, as elsewhere, the power of prevention of unnecessary risk, is the proper and best security. Upon the other hand, it would appear a severe regulation, to exclude the proprietor, without leave asked and granted, from such rural sports as he might find upon his own grounds, which might have a tendency to prevent monied men from investing their capital in the purchase, the improvement, and adorning of landed estates. Expediencies here clash, and the subject is confessedly of great delicacy. Farmers, no doubt, are apprised of their situation; and, in their calculations of discount, must make allowance for risks, whether more constant or occasional. Meanwhile, I have stated the matter in the strongest point of view, as there can be no harm in reminding hunters, of the very particular situation in which the very valuable farming stock of the country is placed,—a circumstance perhaps too apt to be forgotten in the ardour of the chase.'

' Game seems now, by the latest decisions, to be considered as property, or at least that the property of another cannot be rendered subservient to the use of starting game in it, or of following game through it; and it is thus happily in the power of he proprietor of the lands, to exclude all privileged hunters, whose rashness might render them more regardless of risk upon he property of another, where they have less interest in the teant's thriving.'

Burdens affecting the leaseholder deserve consideration, in reard to their effect upon agricultural industry.

Taxation, laid equally and proportionally upon *real income*, is ndoubtedly the fairest of all; and, if fairly and impartially leied, could discourage no kind of industry in particular, as no erson would refrain from bettering his own circumstances, that e might thereby impoverish the public treasury. But the preent system of taxing the *imputed*, as the *real* income of Scotch easeholders, must be extremely unequal. At the next period of leasing, no doubt, offerers will be in a state to consider the tax paid upon rent as, in effect, an addition to the rent; their offers will be proportionally less, and the tax will turn out merely a tax of 15 *per cent.* upon land.

Taxes upon the gross produce of land, are of the very worst constitution of taxes, because they cannot be proportioned to profit or real income, as the worst land requires always equal, often greater, expense of culture, than the best, whilst the return must after all prove greatly inferior.

Tythe of produce is, in this view, as well as in various other respects, an ill constituted tax, more expensive to the payers, than profitable to the receivers; highly discouraging to agricultural industry, and more particularly to the cultivation of lands of inferior quality. From this tax, at least in shape of a tax upon gross produce, the lands of Scotland are entirely exempted. Ever since the decreet-arbitral of Charles I. in 1629, as confirmed by act of Parliament in 1633, it hath been in the power of every Scotch proprietor of land, to have had the tythe of his lands valued and fixed for ever, at one-fifth part of the actual free rent at the time of valuation, and also to purchase his tythe, from the lay impropriator, or *titular of the teinds*, (the tythe having never, in any part, been in the possession of the Reformed Clergy), at, (according to certain circumstances), six years, or nine years purchase of them as so valued. These teinds, so purchased, continuing liable, after those not purchased should be exhausted, to such stipend as the Scotch Parliament, (since the Union, the Court of Session), should judge it meet to allocate from them to the Clergy.

Tythe may be commuted upon two different principles; either that of fixing them down for ever, as in Scotland, at their presently existing value; or that of allowing their value, like that of rent, to keep pace with the increasing value of land. If valued upon the first principle, the commutation must either be,—in money, which exposes them to fall with the depreciation of money,—or in equivalent of allocated land, which dooms it to sterility under mortmain holding,—or in a grain rent, which would not be attended with the inconveniencies of disputes about quality, or of forcing the Clergy into the corn trade, if the *ipsa corpora* were neither tenderable nor exigible, but to be paid for always at a conversion money price, and upon the average of last seven or eight years (to prevent the effect of the wide fluctuations of grain prices from year to year). If they are commuted upon the second principle, of their value not being fixed, but left ambulatory, to follow the fluctuation of the value of land, none of the above modes of commutation can apply, but the deleterious one of the allocation of land. And no other eligible mode suggests itself, to avoid the present bad constitution of a tax upon gross produce, but converting the tythe, into a given proportion, of the free rent paid to the landholder.*

By act 1748, the Scotch tenant is relieved from all burdens, not expressly stipulated in his lease, or what should be imposed by act of Parliament, excepting the one-half of schoolmaster's salary, and of poor's rates, and adstriction to mills.

The tenant's half of school-salary and poor's rates, will hardly, on an average, exceed one, or one and a half *per cent.* upon his rent.

Adstriction to mills, so far as it goes, is, like tythe, a tax upon gross produce, and gives the same obstruction to land improvement.

The rate of adstriction, both as to the quantity of produce over which it extends, and the proportional part of that quantity which it claims, is various, in different parts of the country. The lowest quantity of adstriction, extends to all the oatmeal used in the family of the farmer,—a quantity not susceptible of very accurate definition. That quantity, the privileged mill has the exclusive right of manufacturing, and is entitled to a twenty-fifth part, (the lowest proportion generally accompanying the most confined extent), as *multure*, or price of the manufacturing, instead of a thirty-second part, which is esteemed the ordinary market rate. The exclusive privilege, is sometimes found to extend to all the growing corns, seed and horse corn only excepted; and under such extension, the proportion exigible as multure, reaches sometimes to the tenth part.

---

* This mode of commutation, suggested by Malthus, is strongly recommended in Brown's Treatise on Rural Affairs, lately published.

The adstriction is, very generally, understood to extend only to oats, being the grain principally consumed in bread, and peas or barley being probably little cultivated at the time when adstrictions were originally constituted. In such cases, the farmer may be tempted, to substitute some of these grains, where oats would have been the preferable crop. Land in pasture is universally understood to be exempted from any claim on the part of the privileged mill; and where the rate of adstriction is extensive and high, it may lead to a disproportionate allocation into pasture.

The exclusive privilege of employment, is ever felt galling to those subjected to the yoke; they can never feel confidence in being well served, by those over whom they have not the check of being able to withdraw their employment, when they are dissatisfied with the work.

It would appear from Marshall's writings, that adstriction to mills in England, has generally died its natural death, by mutual convention or dereliction. In Scotland it is in progress towards decay. Few country gentlemen ever now think of confining their own tenants to their own mills, under such a preposterous bondage. Where a proprietor of a mill holds the lands of another proprietor adstricted to his mill, it is not to be supposed, that he should quit his privilege without a compensation. But this might be settled by private bargain, were it not for the obstruction of entail, which here, as elsewhere, is continually interrupting the rational exercise of the right of property in land. A compulsory provision for enforcing the commutation of thirlage or adstriction, has been obtained by the late act, 39th Geo. III. The terms of it are abundantly equitable. It is made competent for the proprietor, either of the dominant mill, or the servient lands, to pursue for a commutation, before the Sheriff of that county within which the mill lies; and the Sheriff is to summon a jury, of at least twenty-one, consisting of heritors, or tenants of land paying 30*l.* of yearly rent, or valued at 30*l.* Scotch in the cess-books; which number, by alternate rejection by the parties, being reduced to nine, they, after examining evidence, are to award an equivalent compensation in a yearly payment of grain, it being in the option of the payer, to pay in grain or the price of the fiars: Yet there are not many instances of the privileges of the act being claimed, probably from the parties being at a loss to conceive, upon what principles a jury would decide, in a case to which it is hard to say what principles can apply. †

In grain counties, thirlage is falling into disuse, through dereliction. The miller becomes an extensive manufacturer of grain; and, rather than have his own plans broken in upon, and his time taken up, by serving those adstricted to him, when they choose to call for his services, he is willing to renounce his exclusive right to be employed, and the higher rate of pay which he is privileged to exact. The farmers confine themselves to production; and the miller becomes their merchant, or their merchant's manufacturer.

---

† A jury in Ross-shire determined, that the whole thirled multures paid when the mill was employed, should continue to be paid as the price of freedom. (See Farmer's Magazine). Exemption from *black maill* would not have been easily valued.

Considering the scarcity of capital when corn mills began to be erected, the over proportion of them to the work to be executed, (necessary from the unpermeable state of roads, in order that the work might be executed at all), with the peculiar favour which the Legislature seems ever to have been inclined to show to every species of manufacture, whether more necessary or more superfluous: it will not be matter of surprise, that erectors of mills, should have required, as the conditions of their erection, both a certainty, and considerable extent of employment, and at a high rate of wages,—not that the Legislature should have anxiously sanctioned all those privileges,—nor that the judges should have been ready to bestow upon them a liberal interpretation.

From the ready access to all parts of the country, at all distances, by roads, there is now no need of supporting more machinery than what can find constant and full employment: from the present improved state of machinery, every machine, too, is now capable of performing much more work than formerly. From these causes, although there is now surely much more grain to be manufactured, there is a superfluity of corn mills, which could not be supported, but by the compulsory employment obtained through adstriction.

The multiplicity of corn mills going by water, (the only moving power known at the time of erection), is complained of as a nuisance in other respects. They interrupt the profitable use of water for the purposes of irrigation; they often prevent the draining of lands, by preventing the descent of waters; they convert low lands into marshes, from the leakage of mill-ponds and mill-leads. As the whole of corn mill machinery, might be moved by the powers of steam, or of wind, equally well, and often equally cheap, as by water, and as there is no dread of not having machinery erected voluntarily, wherever there is a real demand for its employment; it might not be improper, that a legislative compulsitor should be interposed, enforcing the sale of the privilege of having a water mill, at a fair valuation, wherever it could be properly instructed, before a proper court, by those having interest in, and applying for the purchase, that the benefit to result from undamming of the waters, or converting them to the purposes of irrigation, exceeded the rent of the mill by one half, or one whole, or some such other proportionate advantage.

CHAPTER III.

APPENDIX, No. 1.

THE MATERIALS EMPLOYED IN FORMING THE WALLS OF AGRICULTURAL BUILDINGS, IN THE VARIOUS DISTRICTS OF SCOTLAND.

the more northern parts of Scotland, the materials employ-
the construction of cottages and outhouses, are of the sim-
and cheapest sorts, and generally such as the country in
they are built most readily offers. Where stones cannot
be got, the walls are made of sod, or with a mixture of sod
tones, in alternate layers; and when properly constructed,
lways have a foundation of stones, built above the surface
ground all around. It is proper to add, that this mode
cting cottages has been long abandoned in all the more im-
d districts, though still too frequent in the more remote
of the kingdom.

plan of constructing earthen walls in the manner called
has hardly yet been introduced into Scotland. When
d in this method, a case or mould is made of planks, leav-
e space for the walls between, which is filled with earth,
ed and beat into a hard state: the case is then moved for
er part of the wall, filled as before, and so on, till the
is completed. Such walls, in sheltered situations, and
rly constructed, may stand a number of years; but where
d to frequent beating rains, soon go to ruin, and should
e used in favourable climates, and where the district does
rnish better materials.

plan of building cottages, with walls of mud or clay, is
d in Dumfries-shire. These houses, when plastered, and
ly finished within (as is the case with many), are exceed-
warm and comfortable.* It likewise appears, from the
ical Account of the Parish of Errol, in Perthshire, that
made of clay, when properly constructed, are found to
emely durable. †

walls of cottages, and inferior buildings, are sometimes,
h very rarely, constructed of quartering, covered with lath,
rd finished plaster, on the outside; also with tiles, slate, or
rs, and lathed and plastered inside. This method is ex-
e, and only done where stone or bricks cannot be got; be-
houses so constructed are very cold in winter.

---

tistical Account of Scotland (parish of Dornock, Dumfries-shire), p. 22.

tistical Account. Vol. iv. p. 490.

Bricks are a ready and useful material in building; but from the high price, the walls are commonly made too thin, of course are very cold. All bricks should be made of well wrought clay, exposed to at least one winter's frost, and well burnt, so as to give out a sharp sound when struck against one another. Bricks, not thoroughly burnt, never dry, and soon go to waste.

The earth most proper for making bricks is a clayey loam, neither abounding too much with argillaceous matter, which causes them to shrink and crack in the drying, nor with too much sand, which renders them brittle.

Bricks burnt in the usual way, if steeped in water, and *burnt again*, become much stronger, and better adapted for outer walls, than any other kind.

To promote the necessary cohesion of bricks and lime, it is proper, in summer, to dip them in water until saturated; this removes also the dust which hangs about bricks, and prevents their union with the lime.

Stones, are the best, most substantial, and most durable material for all kinds of buildings, and, happily for the cottagers in Scotland, are easily found, in almost every corner of the country, at least such as will serve for their humble dwellings. In places where there are no freestone, and where lime is expensive, the walls may be built of such stones as the ground produces, not less than two feet thick, packed and bedded in clay or mud; the outside, to the breadth of five or six inches, built with lime, and all the joints closely pointed; the cases for doors and windows fitted in whilst building. Walls of this construction, if properly attended to in making the joints close, are very substantial; but it should be observed, that all such walls require a greater thickness than if wholly built with lime, of course consume more stones.

Where lime for the whole wall is allowed, the work will be much more complete; and in that case, if the stones are of a flat form, the walls for low buildings may be only eighteen or twenty inches thick. With materials of this sort, hewn stones, for the openings, are not necessary in inferior buildings; but where soft freestone abounds, the expense of dressing those for the corners and openings is trifling, and make by far the most complete building. Indeed, all the cottages in the more improved districts have for many years been built in this manner.

Sand, used in building, should be clean, and free from earth, so as not to soil water when immersed in it; the particles hard, with sharp angles, at a medium about the size of mustard seed, but part of them larger, and part smaller, so as to fill up the interstices when mixed with the lime.—Sea sand retains the damp long, and should not be used if it can be avoided.

Lime, should be slacked as soon after burning as possible, and carefully passed through a fine riddle or search, keeping all the fine powder of the lime by itself, and laying aside all the small stones, and unfallen particles, for a second burning, or to be put on land. The fine powder of the lime, which, if the lime is good, and properly burnt, will be nearly the whole, is then to be mixed with the sand, and as much water as will just wet all the particles; the quantity of sand to be determined by observing when each particle, after a thorough mixture, is covered with lime, and no more. The mortar is then put up in a heap, to *sour* as it is called, but this not to remain above a few days, when it ought to be thoroughly and repeatedly mixed, and beat for a long continuance, and then used in the walls. It should be observed, that nothing destroys lime so much, as long exposure to air and moisture, before using; and great part of its strength, as a cement, depends upon the beating and labour bestowed in mixing it with the sand, so as to leave no parts of the lime without sand intervening, and no particles of the sand without lime. The quantity of sand in mortar, depends entirely on the quality of the lime, some being of a more fat and glutinous quality than others. Good lime gives near three times the bulk of powder to that of the shells, and will require about three times the bulk of the powder to sand it. From the impurity of some limestone, a large quantity of sandy particles is mixed with the lime, so as to require only a small addition of sand when made into mortar. This, though very unprofitable when sand is easily got at, will make excellent mortar, as the sand has been burnt along with the lime, of course free from that tendency to moisture to which sea sand is liable, and occasioning the mortar to harden much sooner than otherwise. In all cases, therefore, where the mortar is wanted to dry and take band quickly, the sand should all be thoroughly dried before mixing with the lime.

The above method of making mortar, differs from the general practice, chiefly in the time allowed for the lime to stand after mixing with the sand, being commonly left for several weeks; but this exposure always destroys the binding qualities of the lime, in proportion to the time so left; and, when proper care is not observed, in admitting any but the finest powder of the lime, can serve no useful purpose. In the common practice, however, the lime is mixed with the sand without riddling, and when stony is riddled along with the sand, through a wide riddle, passing many unfallen pieces of lime; to give time for the falling of which, it becomes necessary to wait much longer than in the former case, before the mortar can be used; but this mortar is always very inferior, and the loss occasioned by the exposure, much greater, than all the gain from the after falling of the shells, that would in the former case have been laid aside.

In many cases, however, it is not practicable to follow the method here recommended, in all its parts; as, in places at a distance from lime-kilns, where the lime is brought by sea, or in large quantities at once. In that case, the shells or burnt lime, should be slacked as soon as possible, and the lime piled up in heaps, and covered closely over, with a layer of sand, at least six inches thick: if also under a roof, so much the better; the mixing with sand and water, to be deferred till wanted for immediate use, and done as already explained.

For plaster, it is absolutely necessary to permit the lime a sufficient time to cool and fall; as, in that sort of work, the least particle not reduced to powder, admitted into the plaster, occasions blisters. In cases where there is not time to wait for these particles falling, it should be dissolved through a riddle, by pouring water over it; but as this very much weakens the strength of the lime, it should never be practised, when proper time can be allowed.

Timber.—The fir from Memel, and other ports in the Baltic, is the best and most useful for building; but the present state of the Continent, renders it a very expensive article. With the supplies from the British colonies in America, and the produce of the country, timber fit for every purpose can be had. Great part of the American timber is of a soft texture, and, though fit for inside work, is not adapted for scantlings or beams; but there are quantities of it imported, particularly from Quebec, fit for every purpose; and, from the great size of the logs, all the different dimensions of scantlings that can be wanted, may be cut out with advantage.

Great quantities of Scotch fir and larch, the growth of the country, have been cut down and used, particularly since the price of foreign timber has so much advanced. Very few woods in this country, produce timber of a quality equal to that of the Continent, it being coarser in the fibres, full of knots, and the proportion of sapwood much greater. At the same time, it may be observed, that the firs on the estates of Gordon, Grant, Mo-nimusk, Rothiemurchus, and Orps, in the north country, and on the estate of Tyningham and others in the Lothians, have been found to be of an excellent quality, and fit for all country purposes. The larch, however, when allowed time to season, is not only strong, but useful and durable. For cottages, outhouses, and buildings not requiring expensive inside finishing, the Scotch fir, cleared of the sapwood, will suit very well. In those sorts of buildings, where home timber is used, it should always be considered, in cutting out the scantling, &c. that all the blue, or sap part of the wood, will in a very few years decay, and become useless; there should therefore be as much sound timber, in every scantling, as will be sufficient, of itself, to sustain the weight of pressure required, although, for several reasons, it may not be advantageous, to cut off the whole of the sapwood from the timber.

Oak is very useful in building, for beams and purposes where great strength is required, for wainscoting, &c.; but the hardness, high price, and great demand for it in ship-building, almost excludes it from the inferior sorts of buildings. There are, however, a number of oak, birch, and other trees of a small size, cut down in thinning plantations, for bark, &c. which, if properly attended to, might be very useful, as scantling for cottages or outhouses. Oak takes a long time to season it for the purposes of any building, and ought to be kept in water about a twelvemonth after being cut down, and then thoroughly dried before it is used. No timber whatever should be used in building, till the natural sap is completely dried out of it, which is best done by exposure to the weather, for at least one winter; care being taken to lay it clear of the ground, and that the supports, on which it lies, are as narrow as possible, so that no lodgment is made for moisture, to remain stagnant on any part of it; to prevent which it should be frequently turned, and all parts exposed to the air.

On wooded estates, if a place were appropriated for a timber yard, a great quantity of timber might be saved for small buildings, which otherwise would probably go to waste.

Cast-Iron, among other materials for building, has of late been used to a considerable extent, in constructing roofs, and as supports and framing for floors. The properties of cast-iron, its great expansion and contraction from heat and cold, its strength under an equal pressure, and brittleness when exposed to a sudden stroke, are well known.

Hollow pillars of cast-iron form a cheap and convenient support for floors, and other parts of a building; and for flat roofs, over wide buildings, rafters of cast-iron may be formed at less expense than of timber. In forming such rafters, and constructing of the roof, it must be particularly attended to, that the depth and surface of the iron be of sufficient dimensions for the weight to be sustained. The strength of the rafter will be in proportion to the quantity of surface, in the same manner as timber when laid horizontally: thus, a bar one inch square, whose surface is four inches, will not sustain one half the weight that the same quantity of iron will bear, when formd into a bar four inches broad, and one quarter inch thick, laced on edge, the surface of the same quantity being then ight inches and a half. Upon this principle, iron rafters are ade, in the form of two thin bars, joined together in the same ane, with the same breadth of iron, at distances not much exeding the space between the bars—only, all cast in one piece. this manner, a rafter for a space of thirty feet, ought to be med about thirteen inches broad, and three-eighths, or half inch thick, with open spaces in it of nine inches square, breadth of the iron all over being three inches. Cast-iron rafters are formed with a flenge at top, projecting at least three quarters of an inch on each side, for resting the wood scantlings upon, and through which holes are drilled for iron pins, to fix them to the rafters. In stretches above sixteen feet, the rafters are cast in two or more pieces, and joined together by flenges at the ends, with wedge pins. Such rafters will sustain a regular perpendicular pressure, without failure, but are unfit for any occasional thrust, or pressure in other directions; of course must be well secured from all such, and firmly fixed in their position.

In cases, where proper timber cannot be got, for roofs of considerable width, or for supporting roofs, over large sheds, open at one or both sides, these rafters may be used with advantage, although not adapted for common occasions.

Where particular caution is required, to avoid destruction by fire, as in warehouses for goods, large granaries, &c. the floors are sustained by cast-iron hollow pillars, at about twelve feet distance each way, on which are laid, cast-iron frames in squares, within, and upon which are formed, flat arches of bricks, levelled up straight on the upper side for the floor, and the same continued up five or six stories; the window frames and astragals also made of cast-iron. *

Malleable Iron is used in roofs of large extent, for king-posts, bolts, and braces.

CHAP. III. APP. No. 2.

MATERIALS FOR COVERING ROOFS.

FOR covering the roofs of houses, a great variety of materials have been adopted. Roofs formed with rude branches, and trunks of trees, covered with sod or turf, seem to have been the original sorts, for the dwellings of the peasantry, over great part of this country, being the readiest materials for a rude people, left to shift for themselves, without means or assistance from artists. If it is admitted, that such roofs are warm in dry weather (and that is certainly all that can be said in their favour), yet for every other purpose of a roof, they are the worst possible, being incapable of holding out rain for any continuance, and retaining moisture so long afterwards, as to be almost always in such a damp state, as to render it impossible to make a comfortable dwelling under them.

Roofs of *sod*, are certainly not at all suitable to the moist climate of this country, and ought never to be used for houses, where the health and comfort of the inhabitants, are considered as objects of importance.

---

* A large warehouse, of eight stories, was lately built in this manner at North Leith. The price of cast-iron pillars must depend, on the quantity used, being so much a pound.

Thatching with reeds, heath, or straw, when properly executed, forms excellent covering for cottages, being both warm and dry.

Reeds can only be got at particular places, and are expensive, when brought from a distance.

Heath is the produce of certain hilly or mountainous districts, only; and where such a covering can be got, it is the most durable of all thatching. The best heath thatching, is in the counties of Roxburgh, and Clydesdale, and has recently been introduced into Caithness. Roofs, well covered with heath, may cost about 30s. per rood, of 36 square yards, exclusive of carriage.

Straw, though formerly much used for thatch in many districts, is now so highly valued by the farmer, as to be seldom appropriated for such a purpose. Besides, roofs covered with thatch, are liable to take fire, and easily form lodgments for vermin. But although these objections will, in a great measure, exclude such roofs from farm offices, they will still occasionally be used for detached cottages. The proper execution of such roofs, however, is so much a matter of practice and dexterity in the workmanship, that the only way to have them well done, in places where such work is not generally practised, is to procure regularly trained thatchers, from those districts where such a sort of covering is common. All thatched roofs, should not have less rise than the square, that is, the sides to form a right angle at the ridge, its height being one half of the span over the walls.*

---

* The mode of thatching with straw and clay is thus described in the Report of the Northern districts of Scotland.

"The straw must be thrashed whole in the sheaf, that is, without untying the band that keeps it together. After corn is thrashed off, put four sheaves into one bundle, and make as many bundles of the same size, as may contain a quantity of straw necessary for your purpose. The thatcher then puts up his ladder, within three feet of the right hand gable, and spreads out one of the bundles, on the lower part of the roof, between the ladder and the gable. If the roof be covered with divots, or thin turf, the thatcher must twist the upper part of the straw, into a knot, then with a stick, prepared for the purpose, force the knot, thus formed, either under or through the divots, so that it may have a firm hold of the roof; then spread the lower part of the bundle of straw nicely on the roof, then clay it all over, and begin another tier or row.

"Wheat straw is by far the best for the purpose; next, rye straw; strong barley straw is preferable to oats. The thatch should not be thinner than six inches; and when it is eight inches thick, it is the more durable. Divots, or thin turf, were originally thought the best foundation; but it is now found by experience, that it rots the straw, and that straw alone, stitched with rope yarn, lasts infinitely longer.

"The thatcher gets 6d. *per* yard (for workmanship), and pays his assistant out of that allowance. If straw alone, stitched with rope yarn is used, it will last twenty years; but the straw must be laid on two inches thicker than when clay is added. A roof thatched with divots, straw, and clay, in the common way, will last from seventeen to twenty years; it can be mended also without raising any part of the roof that is entire. This kind of roof, is much less liable to catch fire, than straw roofs without clay."

See also Agricultural Survey of Peebles-shire, p. 46.

Shingles, are pieces of wood, generally oak, cut to the size and form of slates, thinned off where covered, and used as a substitute for them: they require a covering of boards under them, in the same manner, and are sometimes used, where lightness is an object, as in covering spires, &c. but would be more expensive, and much inferior to slates, for any other purpose.

Pantiles, are among the cheapest articles for covering, and as such are extensively used. The objections to tiles are chiefly, that they are porous and pervious to rain and frost; thus readily admitting the heat in summer, and cold in winter. They also imbibe one-seventh part of their weight of water, and require five or six days to dry thoroughly. Slates, imbibe only one-hundreth part, and will be as dry as ever, in the course of two hours. It is known that tiles, made at some manufactories, are superior to those of others, from the quality and temper of the clay. The glazing of tiles very much improves them, while it remains on; but when common tiles have stood some years, and begin to fog, the pores fill up; for which purpose, the steeping of tiles in lime-water, will be found very useful. All tiles should be well burnt, and correctly moulded. The inside of the tiles, should be well pointed up with plaster lime, so as to shut out the external air; and when used for dwelling houses, if filleting were nailed on the sides of the scantlings, and the spaces lathed and plastered, in the same manner as done on joists for deafening floors, the mischievous effects of heat and cold, would be greatly remedied.

Slates, next to lead, are the best and most durable covering for roofs hitherto known; but in many places, their high price, from the duty and carriage, renders them too expensive for cottages and inferior buildings, where the first cost is a matter of importance; although, upon a comparison for a fifty or a hundred years, they would in many cases be found the cheapest. In districts, however, where slates are cheap, no other covering need be thought of, except where flat roofs are wanted. The best slates in Scotland, are from the quarries of Easdale, and Balachulish; besides these, there are many good slate quarries, in various parts of the country.

For roofing with these slates, the scantlings are covered with boarding, or *sarking* as it is called, three-fourths of an inch thick, laid close together; the slates are dressed square, sorted to the different lengths, and laid on with as much plaster lime, at the top of each, as makes them lie solid; the second slate, should overlap the nail hole of the first, near two inches; the nails should be of the best hammered iron, at from 8 to 12 lib. per thousand, according to the size of the slates. Slate roofs should have a rise, of not less than one-fourth of the space, and need not exceed one-third, according to the large or small size of the slates.

As the first failures in slate-roofs, are from the nails rusting and giving way, or from the bad quality of the boarding, all nails, used in slating, should be previously immersed in boiling linseed oil, which gives them a japan, that secures them from rust; and no boarding should be admitted, that has any sap-wood in it. Copper nails are sometimes used in expensive buildings.

In Wales, and the West of England, there are a number of quarries, producing slates of a larger size, and with a smoother surface, than any in Scotland, and which are sometimes imported into this country. With them the roofs may be made more flat; and the large sized ones are sometimes put on upon laths, in the same manner as for tiles,* when the inside of the slating is pointed with lime all over. Upon this method, an improvement has been invented, and a patent taken out, which consists, in cutting all the slates of a particular form, the length to extend over the scantlings of the roof, to which they are fixed by nails or pins, without any boarding. This makes a handsome covering, but can only be done with a particular sort of slate, which, in most cases is as expensive, as the value of the sarking saved: besides, they cannot easily be repaired, where the inside of the slates are not accessible, from the lath and plaster on the ceiling.

In some parts of the country, there are quarries of *sandstone flags*, the thin layers of which, form what are called *grey slates*. They are commonly of a large size, and hung on laths with pins, which admits of their being pointed with plaster on the inside. They make a warm and durable roof; but from their great weight, require strong timbers to sustain them, and, being more porous than slate, require a slope nearly equal to tiles.

As the eaves of tile-roofs are very apt to break, a triple row of slates, round the eaves of roofs covered with tiles, will be found a great advantage.

Lead and *Copper*, on account of the great expense, are only used for gutters, ridges, &c. and on platforms over buildings of consequence.

The well-known expansion and contraction of metals, by heat and cold, renders it necessary to have them so laid, as to admit of this alteration in bulk; of course, the sheets on platforms and gutters, ought never to be soldered together, but joined by seams and overlaps. Lead, on platforms, ought never to be less than 7 lib. per square foot; in gutters somewhat more: For ridges, peinds, &c., cast-lead, at 6 lib. per square foot, will be sufficient, or milled lead at 4 lib.

---

* It may just be noticed, that there are many slate roofs, without *sarking* deals. The slates are hung with a pin on laths, and *rendered*, as it is called, with lime, in the same way as tiles, only overlapping more. This is the usual practice, even with the best houses, in some of the western counties, and is much less expensive than the common method of nailing them to sarking. It is remarked, however, that the thin slates from Wales and Peebles-shire, are much better put on with sarking deals, than laths; they are best put on with a nail on each side of the slate, which prevents their ever coming off, unless they break quite across. The Welsh slates are not supposed to be so hardy and durable as the Scotch.

Brown Packing Paper, saturated with Tar, as a covering for roofs, was introduced upwards of twenty years ago, in covering a public storehouse near the harbour of Greenock, which still continues in good preservation; and it has, in various other places, been tried, although not in all with equal success, probably owing to the different management.

The most approved manner of executing such a roof, is as follows: The covering being extremely light, the scantlings need be no stronger, than just sufficient to carry the weight of the person who puts it on, without bending. The proper rise is, about one inch to every foot of breadth. The scantling is covered with boarding, one half inch thick, and in slips, not above four inches broad, with close joints; the external covering, is brown packing paper,* which is first dipped in tar, raised nearly to the boiling point; the sheets are allowed to dry for two days. The wood is then covered with boiled tar, and the sheets of paper are again dipped in tar, and nailed on the roof as slates, overlapping one another, so as to be triple at the joinings, and double in every other place. Over the whole is laid a coat of tar, boiled to nearly the consistence of pitch, in which, coarse sharp sand, or fine smithy ashes, is sifted all over, to prevent the combustibility, and the liquefaction of the tar; the whole, gently pressed down with a roller. It will be necessary to renew this last coat of sand and tar, probably once in two years. One barrel of tar is required for a rood of thirty-six square yards: the whole cost, exclusive of the timbers, will be about five pounds per rood. †

A Composition of Tar, Whitening, and Sand, introduced into this country by Lord Minto, for covering roofs in Roxburghshire, has been much approved of, and is now very much used, as a cheap and substantial covering for flat roofs.

This composition, consists of one-seventh of tar, three of whitening, and three of sand. Archangel tar is the best, though some very good tar is got from Norway, and the ports in the Baltic; but American tar is found not to answer. The tar should be boiled in quantities, not exceeding two gallons and a half in one pot; the whitening, to be dried, and mixed with the tar, as soon as it begins to boil; and the sand, clean and sharp, containing an equal mixture of large and small particles, after being previously heated, and dried upon an iron plate, should be gradually put into the mixture. The whole must be constantly kept in motion while in the pot, by an iron rod, to prevent parts of it burning on the bottom, and to have it properly mixed. As soon as the whole is well incorporated, the composition is ready for use: the fire will then have to be partly withdrawn, to avoid burning, and rendering it too hard. The composition is raised to the roof, in a small pot, and spread upon the boards with hot irons, in the form of those used by tailors, being about nine inches long, five broad, and one thick, flat and smooth, pointed at the end, for doing the corners and for gutters; for which purpose also, some irons must be made, rounded across the breadth. As the composition can only be spread out when fluid, and very hot, the furnace for heating the irons, will require to be set on the roof and moved about with the workman. That the work may proceed without interruption, there should be three pots preparing at the same time. This covering is often finished with one coat only, which is generally made three quarters of an inch thick; but in roofs of more consequence, it should be done with two coats, the first, a full half inch thick, and the second, not laid on for some weeks or months after, so as to allow time for the shrinking of the timbers, &c.; when it is laid on, in the same manner as at first, and nearly of the same thickness. Should any chinks or openings take place afterwards (which seldom happens when done with two coats), by going over the defective places with a hot iron, so as to join it together again, and then covering the joint, with a thin coating of the composition over it, the whole will be completely water-tight. Roofs covered in this manner, have the colour and appearance of lead, and have hitherto been found every way good, with all the appearance of durability.

---

* The sheathing paper used at first is found too thick and pulpy.

† See Report of Dumbartonshire, p. 34, and Appendix, No. 4.

The scantling for this covering, should not be less than for lead or slate, as it weighs about eight pounds per square foot; the boarding not less than three-fourths of an inch thick, nor more than three, or three and a half inches broad, close jointed, and well nailed. Particular attention must be given, that the whole of the timber be well seasoned. The slope, or declivity of such roofs, need not exceed six, and should not be under, four inches in ten feet.

To make the composition about three quarters of an inch thick, will require two barrels of tar, five cwt. of whitening, and the same bulk of sand, to every rood of thirty-six square yards. As the putting up of pots, &c. is the same for the covering of a large as a small roof, when a large quantity of the composition is done in one place, it will be considerably cheaper than for small spaces, and will be found to vary from 5s. 6d. to 8s. per square yard.

It must be observed, in estimating the comparative expense of covering with the above composition, or with paper, that owing to the little rise required to throw off the water, there is much less surface, of course fewer yards of materials, in such roofs than in those covered with tile, slate, &c.

Malleable Iron, has recently been recommended, for the roofs of large buildings; but is not applicable to houses of a moderate size. It is sometimes used in thin plates, betwixt iron joisting and rafters, to shut out communication in cases of fire.

CHAP. III. APP. No. 3.

OF FLOORS FORMED OF CLAY, COMPOSITION, STONE, BRICK, AND WOOD.

1. *Clay floors*, are the least expensive, and on that account are made for barns, cottages, &c. when more expensive materials cannot be afforded. All clay floors require to be kept dry; for which purpose, the area on which they are to be formed, should be carefully drained of all moisture; and, unless the soil consist of dry sand, gravel, or rock, the space should be brought to a proper level with chips of stones mixed with pounded bricks, or forge ashes. The depth of the clay, not to be less than three, but rather six inches; which should be previously prepared, in the same manner as for bricks, by long exposure, and frequent beatings and turning over. When making it up for the last time, before laying on the floor, a quantity of straw should be thoroughly mixed into, and beat together, with as little moisture in it, as is possible to keep it in a solid body, which will prevent its opening into chinks in the drying. It should be beat down on the floor with a rammer, and smoothed with a heavy roller.

As floors formed of clay only, are easily affected by moisture, a better floor will be formed, by making the first layer, as described above, omitting the straw, and rutting it across with a trowel, in the same manner as is done with the first coat of plaster on walls, but the ruts made deeper. A mixture of clay, brick duſt, or burnt ſand and pounded forge aſhes is then to be wrought up for the upper ſtratum, and mixed with ſlacked lime; the whole thoroughly mixed and beat up; afterwards formed into a heap, and left for a few days; when it ſhould be again beat up, ſpread compactly on the floor, and made as ſmooth as poſſible.

Floors formed of clay, and rods for lofts and upper floors of cottages and outhouſes, are deſcribed in Marſhall's Rural Economy of Norfolk, Vol. II. p. 24, and have ſince been put in practice by Mr Erſkine of Mar, in the following manner: The rods being trimmed, (namely, the twigs and tops taken off), they were laid acroſs the joists, as cloſe to each other as poſſible; if crooked, they were 'crippled,' had a chop in the crooked part, with a hook or hatchet, ſo as to make them touch every joiſt as well as each other; no nails or other confinements.

The clay being well ſoaked in water, the principal part of it was mixed with long wheat ſtraw, which was well wrought into it, by the means of a horſe or man treading it, and by racking it about;

with a turnip hook, the reſt made mortar-wiſe with a ſmall quantity of ſhort ſtraw. The rods being bedded, and the clay prepared, the dauber laid a plank acroſs the rods, to prevent his miſplacing them with his feet; and, ſtanding on this, laid on a thick coat of the ſtraw and clay, ſo as to cover the thickeſt of the ſplints, about an inch thick, with a dung fork, working it well between the crevices of the rods, and making it as level on the top as that rough tool would make it. This done, he went over it again with the mortar clay, (ſtill ſtanding on his plank), and gave it a thin finiſhing coat with a trowel. The thickneſs of the rods and the two coats of clay are about three inches; the thinner they are, the ſooner they dry, and the lighter they are for the joiſts and timbers.

When, from the uncouthneſs of the rods, the clay is forced through between them, the dauber with a hoe cut it off level with the rods on the under ſide; and, for this purpoſe, drew his hoe over every part of it; a job quickly done.

In the ſpring, when the floor is perfectly dry, it is intended to be plaſtered on the under ſide to cover the rods, and give it a parlourable appearance. This will take about a day's work. The expenſe of forty-eight ſquare yards of this floor comes as under:

300 splints (alder and willow rods, about the thickness of a man's wrist, down to that of his thumb) at 1s. 6d. per 100 - - -	L.0	4	6
Three loads of clay - - -	0	4	6
A load of straw - - -	0	2	0
Five days of a bricklayer and labourer -	0	12	6
One ditto to plaster the under side, or 6½d. a yard square - - - -	0	2	6
	L.1	6	0

In the above estimate, the value of the articles are certainly under-rated. Mr Erskine of Marr has since executed one of these floors, the expense of which was 9¼d. per yard.*

2. *Composition floors*, are chiefly formed of lime, and are expensive. When on the ground, the bottom may be either levelled up as described above, with clay; or the space may be levelled, and closely packed with stones and sand, or pounded forge ashes. For upper floors, the composition may be either laid on strong laths, nailed upon the joisting, or on narrow boarding. The strongest and hardest of all compositions is formed of lime and sand. The lime should be used hot from the kiln, taking care to admit none but the fine powder, and carefully excluding all the unfallen particles. The sand should be pure, consisting of a mixture of large and small hard particles; all the moisture from the sand to be exhaled by drying it on iron plates over a fire. When mixed with the lime no more water to be used than absolutely necessary: as much as will remain in the sand, when laid

---

[*] See Farmer's Magazine, vol. viii. p. 281.

on a plank, will be found sufficient. The mixture should contain as much sand as it is possible for the lime to hold together, which, in good lime, will be about four times that of the lime powder. As soon as mixed, the whole must be quickly and constantly beat together, for at least an hour to each quantity, sufficient to cover four yards, and used immediately. As this composition soon hardens, no more must be made up at once than can be laid on the floor the same day. This composition should be laid on in two coats, the first being rutted across and dry, before laying on the second. Each coat should be about one inch thick on floors bearing much stress, and less in proportion for others.

The composition called Roman cement, now so generally known, is also used for floors, but is more expensive.

In all hard compositions, it must be observed, that any shrinking or yielding of the basis on which they are laid, will occasion cracks and fissures; of course, when laid over joists, it is necessary that they are of sufficient strength, and that the laths are strong, and the boarding is well seasoned and cut into narrow slips.

3. *Flag-stone and brick floors* are made in a variety of forms, but chiefly laid on the ground, although sometimes laid on joists and boarding, in upper stories.

Where thin sandstone flags can easily be had, they will form excellent floors at a moderate expence, either used for coarse purposes, and laid on sand, as they come from the quarry, with the edges only straighted with a hammer, or, in a more dressed form, completely smoothed and jointed with the chisel, and laid on a solid bed of lime, and the joints neatly and closely filled up with the same.

Brick floors may be either formed with the common building bricks laid on edge on a bed of sand, and jointed with lime. There are also a variety of pavement bricks for floors, which being only about one inch and a half thick, are better adapted than the common bricks for upper floors, and have fewer joints.

In every sort of floor, the first object should be to keep it free of damp, which, in general, may be done by observing that the space be properly drained, and the bottom made up, as mentioned, for clay floors. When floors are laid with stone flags on areas where damp is to be expected, the flags should be reduced to an equal breadth, so as to be laid in rows; and low walls, of brick or stone, about six inches high, built on the area, at the same distance from centre to centre, as the breadth of the courses or rows of the flags to be laid on them; and being thus kept from contact with the subsoil, they will not imbibe any moisture from it. As a further preventive from damp, part of the open spaces thus left under the flags, should be filled with forge ashes or pounded bricks.

Wood floors are generally formed of narrow fir deals, from three quarters of an inch to one inch and a half thick, and nailed on joists from fourteen to sixteen inches apart. As all planks shrink considerably in their breadth, from the green to the seasoned state, it becomes necessary, in order to have close floors, that the deals for the flooring be sawed out to the proper thickness, and not exceeding seven inches broad, at least nine months before they are to be laid, in which time they are to be exposed to the open air, piled up in stacks, so as to admit a free circulation, and these stacks to be taken down and shifted at least once in that time, taking care that the parts, which were in close contact in the first stack, be clear in the second. Before finishing them off for laying, a few weeks exposure of the whole deal to the sun, is necessary to dry them, for which cause it is improper to lay a deal floor in winter. The deals are commonly wrought with a groove on one edge, and a projecting list, called a feather, in the centre of the other, and by this means the edge of the one is let into the other. Another manner, is to make the edges straight, and fit in a number of small pins, called dooles, about eight inches apart on one edge, with corresponding holes on the other, on which they are driven close together. A more simple manner still, is to lay them close together with straight edges. For fine floors, the finest red wood from the Baltic is preferred, with two years seasoning; and they are sometimes done with oak, inlaid in frames; but for common and ordinary purposes, the deals may be cut out from Norway logs, or white wood plank. It may be proper to observe, that where deal floors are to be laid next the ground, every precaution should be taken to prevent the admission of damp, either to the flooring or scantlings on which it is laid, by preparing the space as described, for the other sorts of floors, and either admitting a *free* ventilation under them, or totally excluding it. All scantlings, next the ground, should be charred, and covered with boiled tar, or steeped in strong lime water.

CHAP. III. APP. No. 4.

ON THE SITUATION AND CONSTRUCTION OF COTTAGES.

A PROPER built cottage is always placed upon a dry spot, where all damp and water-runs can be completely drained off. It is sheltered from the most prevailing winds, by banks, trees, or some intervening objects; and, if that situation can be obtained, fronts the south. If in flat grounds, it is always on some little elevation above the general level; never so much surrounded with, or overtopped by trees, as to occasion damp or smoke, and never sunk into the face of any rising ground. If along the side of a road, the front is placed, at least four or five yards back from it, and upon ground higher than the surface of the road, which will be progressively raised by repeated repairs. If possible, a garden is made in front of the cottage, which has an excellent effect in point of beauty, and the garden is not shaded from the sun, which must be the case when the house fronts the south. It is also essentially necessary to be near a plentiful supply of good water, and at a distance from stagnant pools and marshes.

The floors of cottages should be raised one foot above the surface; the walls built in the most compact manner, and close up to the covering of the roof. The roof, if not thatched, to be first lathed and plastered all over between the scantlings, and then lathed and plastered for the ceiling. The floors formed of any dry substance, as a mixture of clay, brick-dust, forge-ashes, and lime, or common bricks laid on edge in a zig-zag form, or pavement bricks, or dressed flag stones, or deals; for all of which it is necessary, that the area of the floor be first made dry by draining, have all the soil taken off, to the depth of from one-half to two feet, and then covered with chips of stones or dry gravel, which, if mixed with lime, will be preferable. The refuse of an iron-foundry, where it can be got, is the best of all materials; for it absorbs all moisture, and if run full of hot lime, and then smoothed with clay and forge ashes, it makes a preferable floor for a cottage to any other.

The expense of large panes of glass, renders it an object to make those in cottage windows of a small size, which are got at one half the price, *per* superficial foot, of large ones, and may be replaced, when broken, at a small expense. On this principle, the windows of cottages are often glazed with small panes, in lead frames; and sashes of a similar form are now made of cast-iron, which is more durable, and can be had of all sizes; the glass is about twopence per pane, including putty and workmanship. In some places, the frames for the windows have also been made of cast-iron, and fitted into the wall when it is built, thus supplying the place of hewn stone.

It should, however, be particularly attended to, wherever iron is used, that it be carefully covered with boiled oil, or oil paints, to avoid the bad effects of rust.

The chimney must be free from smoking, which, if not overtopped with trees, or close to any higher body, will generally be obtained, by building the vent with a bend backward from the front of the jambs at the first going off, and with an easy turn in its progress upwards, so as to be out of the perpendicular line from the bottom to the top; the size of the opening never less than equal to one foot square, and the stalk raised four or five feet above the roof.

CHAP. III. APP. No. 5.

ECIFICATION AND ESTIMATES FOR COTTAGES (PLATE I.), SUCH AS ARE USUALLY ERECTED IN EAST LOTHIAN, AND THE OTHER ARABLE DISTRICTS IN SCOTLAND.

THE walls are of good ruble building, with hewn ribbets, imney-heads, corners, cape, and jambs. The roof is usually a square pitch, covered with tile. Plain deal doors, crook d bands, with a stock lock. The windows have two sashes, to en from the top.

Detailed Estimate for Two Cottages (See Plate 1. No. I.)

Y.	F.	I.								
			Of ruble building,	L.7	10	0	is	L.30	0	0
	40		of vents,	0	0	6	—	1	0	0
	145		of hewn work,	0	1	0	—	7	15	0
24			of tiling,	3	15	0	—	13	15	0
117			of roofing,	0	3	6	—	20	9	0
	128		of wall plate,	0	0	4	—	2	2	8
5	5		of deal door,	0	6	0	—	1	13	0
	22	5	of windows, glazed,	0	3	6	—	3	17	0
18			of safe lintels,	0	1	0	—	0	18	0
			crooks and bands and locks,	-		-		0	17	0
			L.41 : 3 : 4 each					L.82	6	8

Estimate for Two Cottages (See Plate 1. No. II.)

Y.	F.	I.								
20			of ruble building,	L.7	10	0	is	L.26	15	0
	133		of hewn work,	0	1	0	—	6	13	0
40			of vents,	0	0	6	—	1	0	0
35			of tiling,	3	15	0	—	14	18	0
123			of roofing,	0	3	6	—	21	9	6
222			of wall plates,	0	0	4	—	2	8	0
	16		of windows,	0	3	6	—	2	16	0
	18		of safe lintels,	0	1	0	—	0	18	0
			L.38 : 8 : 9 each,					L.76	17	6

These estimates are calculated on the supposition, that building materials can be got within one mile of the place. The hole of the timber, except the windows, to be from Spey, and he finishing to be of American wood; or the whole of Norway imber, or Scotch fir of equal quality. The above estimates nclude all expense of workmanship, materials, and carriage.

CHAP. III. APP. No. 6.

OF ARCHED ROOFS FOR AGRICULTURAL BUILDINGS.

THE advantages of this plan of constructing cottages and other agricultural buildings, have been already explained in the Chapter itself. It is proposed in this Number of the Appendix, to give a more particular detail of the designs, and of the expense attending this mode of construction, which cannot be too strongly recommended, in all parts of the kingdom, where materials calculated for it can easily be procured.

Plate 2. Is a design for two or more cottages of this sort, having each a living room of twelve feet square, with a porch, a place under the stair, a press, with sheds on the outside for fuel, pig-house and necessary, on the ground floor, and a larger and smaller bed-room above. The section across shows how the arch rises from the side walls, and forms the roof, &c.

These cottages are here made of the smallest dimensions possible to accommodate a family; and the same arrangement would suit equally well, with thinner walls, and a roof of common scantling, covered with slates, tile, &c.

The expense of building such cottages, as in this design, must vary, according to the materials used, and the price of these materials, at the place where they are to be erected. The following estimates will give the quantity of work; and, by varying the prices, to suit local circumstances, a correct idea of the expense may be obtained.

The two cottages (*Plate* 2.) with arched roof, contain 5½ roods of ruble work. (36 yards per rood). at 6*l.* per rood	L. 33	0	0	
120 yards of covering with grey slate at 1s. 9d. - - -	10	10	0	
Centering for roof - -	5	5	0	
40 yards flooring with clay and forge ashes, at 1s. - - -	2	0	0	
40 yards joists and floor, at 6s.	12	0	0	
Six windows, at 30s. - -	9	0	0	
Partitions and doors - -	7	0	0	
150 yards plaster, at 4d. -	2	10	0	
Chimneys and back sheds -	9	5	0	
				L. 90 10 0

Price of each cottage 45*l.* 5*s.*

Ditto roofed with scantlings and slate.

4 rood ruble, at 6*l.* -	L. 24	0	0	
110 yards roofing with slate, at 8s.	44	0	0	
Flooring, plaster, &c. as above	41	15	0	
				L. 109 15 0

Price of each cottage, 54*l.* 17s. 6d.

Mr Erskine of Mar, who has paid much attention to the subject of cottages, approves much of this design, but thinks that an addition of two feet both to the length and breadth, would be adviseable. The outbuildings would greatly contribute to cleanliness. The cottager should be taught the value, as well as the comfort, of a necessary-house; though, in some parts of the country, it will take some time before they learn this truth. The chamber floor may be more wholesome than a ground one; but as yet they are not esteemed equally comfortable by the country people. If they are to be used, a Norfolk hay-chamber should be substituted in place of a deal one. Mr Erskine has just finished his first attempt to make one. They only cost workmanship. The one lately made, stood him nine pence farthing per square yard. But in time he expects to get that sum to cover all expenses.

Some important information upon the ſubject of arched roof cottages, has been tranſmitted to Mr Gilleſpie the architect, by Mr Whyte, of Templeton, near Meigle, in Perthſhire, where ſome buildings, of that form, have been erected; an engraving of the ſections of which, as actually conſtructed, are annexed. (See *Plate* 14.) A is a ſection of a line of ſtables and cow houſes, &c. with lofts for hay, &c. above them. The dotted lines are buttreſſes, built on the ſide walls, from ten feet to twelve apart. The other dotted lines are the windows, alſo arched at the top with the ſame kind of arch as the roofs. B is another kind of arch, which is alſo executed at Meigle, and employed as a barn, the joiſting not being put into it.

For cottages, Mr Whyte prefers the ſection B, as it requires no buttreſs; the line of the arch falling into the foundation, of courſe, requires no buttreſs, and is done cheaper than the other, with little difference of accommodation. He would alſo propoſe, that the under part of the walls ſhould be built nearly perpendicular, as the dotted lines upon B, at one foot one inch; which would form an eaſing for ſlates, &c.

With reſpect to an eſtimate of the expenſe, the local ſituation of the place muſt make an eſſential difference. Mr Whyte, however, has made a calculation of thoſe at Meigle; and, ſuppoſing a houſe of two ſtoreys, 40 by 20 feet over walls, finiſhed in the common way, ſay with Norway wood, at 3s. 6d. per foot, the expenſe would be about 280*l.* The arched roofed one, owing to the ſaving of wood and carriage, could be done there for 230*l.*, which makes a ſaving of 50*l.* in favour of the arched roofs. In regard to cottages one ſtorey high, and the ſame dimenſions over walls, if built according to the plan of ſection B, nearly all the upper ſtorey of the arched building would be ſaved; that is, all the maſonry of the upper ſtorey, not including the finiſhing of it; only the finiſhing of the lower ſtorey to be the ſame as the one-ſtorey houſe.

If a number of cottages of the same width were done in this way, the same centres for throwing the arches, would answer for the whole; so that there will be no great expense in that respect upon a large scale.

The cheapness of those arched roofs must depend upon being near a quarry. Meigle is about a mile from the quarry, and the working it costs about 40s. per rood; but, in these times, when wood is scarce and dear, arched roofs will certainly be a great saving; and, with respect to durability, far superior to any wood.

An attempt was made to save the slating of those at Meigle, by covering them with a composition of lime, brick dust, sand, &c. laid over with fish oil; but the hoar frost of the winter fixing upon the stones the arch was composed of, made all the covering come off, although the outer surface of the plaster was sound. It then became necessary to slate them, fixing the slates to the stones of the arch with nails; but, if they had been slated at first, the slates should have been put on before the outside of the arch was pinned up, which would have made it much easier done, as the slates would be fixed by the pointing up of the arch. The slates may be either grey or blue.

The comparison of the expense of each, above mentioned, includes the slating of both common and arched roofs.

The cheapness of the arched roofs is principally from taking much less wood. If a house of the above dimensions, two storeys high, requires 800 cubic feet of wood of different descriptions, an arched one of the same sort requires only 530 feet, and great part of that plaster lath, standards, &c. which may be of an inferior kind of wood; and the one-storey house will require 450 cubic feet, while the arched roofed one, finishing only the under part of it (same as common one-storey), will only require 138 feet.

There is a degree of nicety required to balance those arched roofs properly, as the first attempt did not succeed; but if built to the dimensions of the sketch herewith sent, there is no doubt of their doing; as those at Meigle, built in that way, have stood these three years, and there is not the least appearance of any defect or failure.

CHAP. III. APP. No. 7.

ON IMPROVED PLANS OF COTTAGES.

THE plans of cottages given in the chapter are similar to those commonly to be met with in the more southern districts of Scotland. At the same time when the country becomes more opulent, the peasantry may be better accommodated, and they may be better enabled to furnish cottages of a larger description. Besides, when cottages can be more substantially built, in particular when the walls are constructed of stronger materials. cottages need not be built so low, and may have two storeys. When these circumstances occur, the annexed plans are submitted to the reader's attention. The expense of erecting such cottages may be estimated as follows.

Plate 3. Is a design for a single cottage on one floor, 24 feet by 18 feet and a half over walls, containing a living room, two bed-closets and a pantry, with outside sheds for a porch, fuel, pig-house and necessary. A small loft would also be got in the roof. The chimney being placed in the middle would keep all the apartments warm, and by making an opening at the back to be shut occasionally by an iron plate, the bed-closets may enjoy the same fire which serves the living room.

This cottage may be erected of any of the materials already described; if built with stone, and roofed with slate, the expense will be nearly as under.

2½ roods of building, at 6*l.* per rood	L.15	0	0	
70 yards roofing with slate, at 8s. per yard - - - -	28	0	0	
100 feet of dressed stone in door, chimney, &c. at 8d. per foot - -	3	6	8	
36 yards flooring, with clay and forge ashes, at 1s. - - -	2	0	0	
Windows and doors - - -	10	0	0	
Plaster and lath on ceiling - -	2	3	4	
Back sheds - - - -	4	0	0	
				L.64 10 0

Plate 4. Is a design for a double cottage for labourers or tradesmen, each containing a living room, pantry, scullery, with place for fuel, &c. under the stair on the ground floor, and two bed-rooms above, with sheds behind for a cow or pig-house, and necessary. This may also be built of the readiest and simplest materials, and would at same time be ornamental.

The expense with stone walls and slate roof would be as under.

3 roods of ruble building, at 6*l.* per rood - - - -	L.36	0	0	
120 yards of roofing with slate, at 8s.	48	0	0	
210 feet of dressed stone, at 8d.	7	0	0	
38 yards of flooring and stair, at 6s.	17	8	0	
58 yards of ditto on ground floor, at 1s. - - -	2	18	0	
Windows 8*l.*, doors 10*l.*, plaster 6*l.*	24	0	0	
Back sheds - - - -	9	0	0	
				L.144 6 0

Price of each cottage, 72*l.* 3s.

Explanation of Plan for a Farm-House and Offices, adapted to a Farm of 500 Acres of Arable Land. (*See* Engraving annexed.)

By MR BURN, Architect, Haddington.

In this court of offices, the court is divided by a range of open shades, viz. two to one court, and two to the other: should these shades not be all wanted open, part of them may be closed in the front, and divided into other necessary purposes, such as a calf-house, a house for feeding early lamb, &c. These shades should be paved, and the floors one foot higher than the paving round the court, so that when the dung court is full, it will not be above the level of the shade floors: these shades to have a flat roof, covered with Lord Minto's composition: by being low, it will look well, and not shade off the sun from the straw yard: the beam that the platform joists lie on to be supported by three posts to each shade, which are to be set into hewn stone sockets six inches above the level of the floor. The work-horse stables are placed one at each end of the straw-barn: in this way, the lofts can be very conveniently filled from the straw barn, and also will make a better division of the dung, by part being delivered into each dung court. These stables, as is shown by the plan, have a door in the end, by which the horses can be taken out and put in without disturbing the cattle in the court, or probably leaving the gate or door open, and letting the cattle out. The walls of these stables are 14 feet high, so that a proper loft can be got over each stable. The walls of the straw-barn and mill-barn are 16 feet high: this height is necessary for the mill-barn when two fanners are drove by the machine, which certainly is a great improvement. An embankment will be necessary at the end of the barn, with a door in the gable 6 feet wide, where the corn is delivered to the loft where the machine stands. The range of houses on each side of the court are 16 feet wide within, and the walls 9½ feet high above the level of the door soles. But to have a proper granary above the cart-shade, (if no advantage can be got from the level of the ground), the wall might be made 11 feet, in place of 9½ feet; but, most likely, that extra height will be got by the ground being 18 inches lower on the outside where the cart shade is; indeed one foot would do. As the upper bed of the door soles in the inside of the court should be 6 inches above the common level of the ground on which the offices are built, the roof water in the inside of the court should be carried off by wooden spouts, and not allowed to go into the dunghill, except when found necessary. The dwelling-house should be placed about 100 feet distance from the gateway front, and to front the gateways; in this way, the stack-yard has an exposure to the south, east and west; the hen house door, and geese and turky house doors, to be in the outside of the fence wall, as in the plan: so that the court doors may require to be opened by house servants as seldom as possible. A water cistern in each court, as is represented by the plan, as also two small outside cisterns for conveying kitchen offal to the swine troughs: the granary over cart shade to have three small shade-board windows on each side, to throw in a proper current of air: the dung court to be hollow in the centre, as represented by the cross section, and to come off from the side-paving, the same way at the ends as at the sides. The small platform on the roof of the dwelling-house may be done with Lord Minto's composition, by executing the roof according to the plan : very light roof timbers will answer, and the roof will be low, which much improves the look of the superstructure : the roofs of the wings are also kept low by a small platform, which may also be covered with composition. If the situation will admit, there may be good cellars under dining or drawing room ; the parlour floor should be 13 inches, or 2 steps above the common level of the ground ; the storeroom, dairy, water-closet and porch to be flat roofs, covered with composition. To execnte a farm-house and offices agreeable to the plan and this specification, will cost about 3000*l.* Sterling, including all materials, workmanship, and carriages.

Haddington, Jan. 21. 1813.

Description and Estimate of the Cottages with Paper Roofs.

(See Plate 15.)

Messrs MACINTOSH, KNOX & Co. have erected buildings necessary for carrying on the manufacture of alum, copperas, and Prussian blue, and cottages for the accommodation of their workmen, with paper roofs, which they have found to answer very well, at Campsie, in the county of Stirling, between four and five years ago. The roofs are made with sheathing paper, such as is used by carpenters for the bottoms of vessels, which, when the pitch is sufficiently boiled, is dipt in the pot, and immediately laid on the sarking ; a small quantity of the boiling pitch is afterwards put on with a mop or brush, and a quantity of sharp sand, such as plasterers use, which may be rolled with a light roller, to make it adhere better to the paper. Archangel tar is the best for making paper roofs, although higher in price, and the barrels contain more than the American ones.

The best sort of timber for the spars and sarking is Dram or Quebec planks.

Paper roofs are best calculated for houses or cottages; as outhouses, in which fire is not used, would be apt to be very damp, and thereby destroy the paper on the roofs. The expense of paper roofs, at the present price of materials, including all charges, will be eight shillings per square yard. The roofs will require a slight repair in about a year after they are finished, and afterwards may last for ten or twelve years without requiring any further repair.

The expense of paper roofs, as stated above, is eight shillings per square yard ; that of slate roofs will cost ten shillings per square yard ; the difference is owing entirely to less wood being used by the former ; besides, less mason work is also required. The only advantage attending them is the difference of price between these two kinds of roofs. Tile roofing is, however, cheaper than either of these at first, but requires to be repaired every year, and at last comes to be the most expensive.

A plan of our cottages (*Plate* 15.) is sent with this, which, it will be observed, are built double, being the cheapest manner of building when several are to be connected together. The expense will in some measure depend on the materials being got near to the place of erection or not. The following would be about the amount of the charges for building four cottages at this place similar to the above plan.

Mason work, 5 roods 4 yards, at 9*l.* 10s. per rood	L. 48	11	1
Stone partitions and standards, 114 yards, at 2s. p. yard	11	8	0
Plastering of walls, 400 yards, at 5d. per yard -	8	6	8
Roofing, tar, and paper, 185 do. at 8d. do. -	74	0	0
Lath and plaster on ceiling, 144 do. at 1s. 5d. do.	10	4	0
Windows, 96 feet, at 2s. per foot - - -	9	12	0
Doors, 25 yards, at 5s. 6d. per yard - - -	6	17	6
12 pair of door frames, at 6s. - - - -	3	12	0
Checks and facings, 170 at 6d. - - - -	4	5	0
Locks, hinges, and snecks - - - -	2	10	0
	L. 179	6	3

The expense of building a single cottage will be 10*l.* more than the proportional shares of the above charges; say 54*l.* 16s. 6d.

Chap. III. App. No. 8.

Description of the Smaller Sorts of Farm-houses and Offices in Scotland.

By the Rev. Dr SKENE KEITH.

In those districts in which small farms prevail, and where more correct cultivation has been but lately introduced, and where, on some pretty large farms in the improved districts, the farmer's house consists only of one storey with a floor laid along the top of the walls, either for holding corn and lumber, or a few beds in the garret; sometimes the house has a kind of second or attic storey, containing from 3 to 5 feet of side wall above the floor, which with the space contained in the roof, is divided into two garret rooms, whose windows are in the gable of the house. This kind of building is now used by a number of small farmers, renting from 60 to 100 acres of arable land. And where the house is 15 or 16 feet wide, only three feet of side wall above the floor makes a roomy garret for corn;—but if there be five feet of side wall, there is room for windows in the front or back wall, as well as in the gables. Even the garret floor, laid on the top of the side-walls above a few narrow joists, affords to the small farmer of 40 acres, or to the tradesman in a village, that accommodation of a garret, which is lost in the Berwickshire cottage. A house with 12 feet of a side-wall 16 feet wide and 36 feet long, 50 years ago, would have been thought a good farm-house in most of the southern counties. Now it is used in the south-east Lowlands, only by the middling class of farmers, and by the tacksmen in several of the Highland districts. For in the northern counties, and both in the Hebrides and other islands, the tacksmen or gentlemen farmers who rent large tracts of land, generally occupy only from 50 to 60 acres for amusement or convenience, subsetting the rest, for profit, to the natives. Their houses are slated and built with lime; but their walls seldom exceed 12 feet in height, because high roofs in the Highlands are much exposed to the storms in winter; yet, in other respects, their houses are neat, roomy and comfortable.

The houses of the native small farmers in the sixth, seventh, eighth and ninth districts, (that is, in the Highlands in general), and in those parts of the Lowland counties, that are near the mountains, are still mean and wretched habitations. Yet a very considerable improvement in their structure has taken place within the last 30 years, except in the remote Highlands, where the want of wood, or its excessively high price, prevents the farmers from building any tolerable houses; and where too many wretched habitations are still to be seen by the man, who is led by curiosity, to visit these remote regions.

In the greatest part of the first and fourth districts, and on farms containing upwards of 100 acres of arable land, in the second, third and fifth districts, neat farm-houses of two storeys, with a set of offices proportioned to the size of the farm, have been built on most new leases within the last 30 years. But there is a very conisderable gradation between the single house of two storeys, which is only 14 or 15 feet wide, and only the same height of side wall with 30 feet of length, and the excellent double house which is 30 feet wide, and 50 feet long over walls, while its side walls are 20 feet high. Between these two, lye the accommodations of the different classes, not only of large farmers, but also of landed gentlemen of moderate fortunes, who cultivate their own estates, and reside upon them. But before giving plans or estimates of any of these, we would call the reader's attention to a few general observations.

I. The improvements in the building of farm-houses, have been much accelerated or retarded, by their having, or not having, the proper materials in the neighbourhood of the farmer, or within a moderate distance of his farm. A farmer is not a merchant; and though he will part with his money to obtain a bargain which is in his eye, he is not fond of long sea-voyages, or long carriages by land, for the commodity which he purchases. Hence, wherever grey slate or thin sandstone can be easily obtained for farm buildings, thatched roofs quickly disappear, and the heavy slate roof soon spreads over a district, where the fine light-blue slate of Eisdale, which can be conveyed into the Lowland districts only by tedious carriage by sea, and also in many places by a long inland carriage, never probably would have been

1. The small farmer, who has only 40 or 50 acres of arable land, generally has only a stable of 12 feet by 13—a cow-house, with two divisions, with a gutter in the middle, both extending to 20 feet by 12.—This commonly holds his cows; and another of 18 feet by 12, divided in a similar manner, contains his young cattle; besides all which, he needs a small house of half the above dimensions for his calves. His granary, and cart-shade, are only 12 feet square, and his poultry houses 8 feet by 12. His thrashing barn is generally 40 feet long by 12 in breadth. His whole offices, owing to the small size of his farm, amount to 120 feet in length, by 12 in breadth, within walls. They generally make two sides of a court; the farm-house being the third, and a stone wall, containing a gate for admitting a cart to take away the dung, encloses the fourth side of the square. It must be acknowledged, however, that many small farmers have not regular courts of offices; but they approximate to this as much as possible in all new buildings.—No straw-yard is used on small farms; nor has the farmer always proper accommodation for his live-stock.

2. The occupier of a middle-sized farm, from 100 to 150 acres, —besides a comfortable dwelling-house, such as was mentioned above, requires a barn, with a thrashing machine 60 feet long by 16 wide;—a stable, 30 feet by 16;—a common stable, 10 feet by 16, for strangers' horses;—a cowhouse with two divisions, 20 feet by 16;—another, of equal dimensions, for three-year old cattle;—a third, 18 feet by 16, for two-year olds;—a fourth, of 17 by 16, for year olds;—a fifth for calves, of 13 by 16;—a cart-shade for 3 carts at least, 22 feet by 16, for holding carts, ploughs, &c.—(a granary should be above his cart-shade.) The whole length is thus 210 feet.

Besides all this, he requires at least 40 feet for a feeding-byre, and 10 feet for a turnip storeroom, or 260 feet by 16. He is also obliged to have a few sheds in his strawyard, to which his winterings have access.

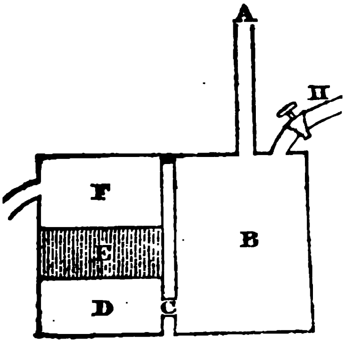
III. A large farmer, who occupies from 240 to 400 Scotch, or from 300 to 500 acres English, requires still more accommodation of offices. The following account is taken from the dimensions of Mr Walker's farm-house and offices in Wester Fintray (Aberdeenshire Report, p. 135.) The court of offices is an oblong square, 130 feet long in front, and 120 deep. The different offices are 16 feet wide within, or 20 feet over walls. The whole belonging to the court extend to 420 feet long, by 20 broad, over walls. Beside these, parallel to the east wing, is another row of office-houses, containing 130 feet of more length, besides a kiln, barn and granary, built near the west wing, and containing 30 feet of more length. There is also a cow-house, 60 feet long by 17 broad, and two small wings, 32 by 17 each, for feeding part of his cattle on the turnips, which are raised at above half a mile's distance from the farm-steading. Thus, e whole accommodation of offices contains a length of nearly 0 feet, by an average breadth of 20 feet over walls.

The houses included in the above statement are the following. the front, on the first story, are, an apartment for the men rvants, and a house for farming-utensils, at the two corners, ch 20 feet by 16; an arched entry to admit a loaded cart into e court; three cart-shades, with flat entries, and a fourth with arched entry, to be in uniformity with the entry into the urt. Grain-lofts are above the whole arches, and in all the nt. In the west wing are the farmer's stable, 46 by 16 feet; l a common stable, 12 by 16 within walls. Next is a thrash- barn, 68 feet long in the west wing, and 56 along the back the court; and the whole east wing, 120 feet in length, is ed with cow-houses, excepting an apartment for a wright's ta- and shop, 18 feet by 20. These are all the houses in the art of offices. In the row parallel to the east wing is a store- om for turnip; a feeding byre, 64 by 17½ feet within walls, ere water is at pleasure introduced into stone troughs. It o contains other two cow-houses for cattle; and three poultry- uses—one for turkeys, one for geese and ducks, and one for ns, or common poultry.

Chap. III. App. No. 9.

Of the Means of Improving Water, for the Use of Farmers and Cottagers.

The importance of any means, by which water can be im- oved for drinking, more especially to the agricultural classes the community, with whom it is so general a beverage, need t be dwelt upon; and fortunately, Mr James Innes, gunsmith dinburgh, has lately invented an ingenious and useful filter for ater and other liquids, of which the following is an explanation.



The principles on which this apparatus is proposed to act, are, either by compressing the water by means of an air piston, or by a column of water falling from a height.

A is a pipe for conducting the water from a height, or where the piston should be placed.

B a cask containing the water to be filtered.

C the channel of communication.

D the bottom of the filtering vessel.

E the filter, of stone, wood, or any other substance, through which it rises.

F the space to which the pure water has risen.

G a discharging pipe.

H a pipe and stop-cock for filling the cask, if the piston is resorted to.

This method may be applied to any cistern where water is kept for family use; or, by placing the water in a large cistern at the top of the house, and placing a filtering machine at the bottom, the weight of the column of water will send it through with great force, and in considerable quantities.

Rain water might be collected from the top of houses for culinary purposes, by spouts, and a small reservoir, at the top of the pipe A, where families, from their local situation, have nothing but pump-water. *

CHAP. III. APP. No. 10.

OF THE EXPENSE OF BUILDING A FARM-HOUSE AND OFFICES, ACCORDING TO THE MOST APPROVED PLANS IN THE ARABLE DISTRICTS OF SCOTLAND.

THE following specifications and estimates are furnished by two intelligent and experienced tradesmen, Messrs William and James Lamb of Tyningham, in East Lothian, and are founded upon proceedings, which they at this time are carrying into execution.

Specification of a Farm-House, (See Plate 9.)

The house to be forty-two by twenty-six feet within; the wings twenty-five by thirteen feet within; the walls two feet, and the gables two and an half thick. The height of the first flat, ten feet, and of the second, eight and an half. The house to be ruble building, with hewn corners, ribbets, belt, chimney-head corners, and cape. The kitchen jambs and pavement, milk-house and passage pavement, to be droved. The stair, room-jambs, pavement in lobby, and the room-hearths to be polished.

The roof to be covered with blue Easdale or Ballachelish slates, with lead flanks at 6 lib. and peens and ridge at 5 lib. *per* superficial foot. The height to be one-third of the span of the roof.

---

* The same plan might be applied to a water cask, in the hold of a ship, without removing it; and the water sent by a pipe, to any part of the vessel where it may be required. This hint, though not, strictly speaking, connected with the inquiries in this Report, will be excused, on account of its importance to a most valuable class of the community.

he joists to be ten inches by two and a quarter, and sixteen es asunder. The roof to be seven at bottom, five at top, two inches thick, eighteen inches asunder. covered with three ters of an inch sarking. The flooring to be one inch and a ter thick, seven inches broad, grooved and tongued. The s upon the three rooms below to be six feet nine high, by e feet wide, and an inch and three quarters thick, properly ed, with six pannels; the press doors same size, one inch a quarter thick; the doors in upper flat six feet six inches, wo feet nine, one inch and an half thick. The windows, six nine by three feet four, below, and five by three feet two es above, and the wings six feet by three; all two inches c; the three best rooms double hung, with one inch and three ters brass pully-boxes; all the other windows, single hung the top, glazed with good crown glass, and a coat of paint he outside; the three best rooms to be finished with bound ters, breasts, and scuncheons, and soffits, window and door itraves, base and surbase, and jamb-mouldings; the three rooms to have bound shutters, base, architrave, and jamb-ldings; the under lobby, architraves, and skirting; the nur-closets and upper lobby to have plain facings and skirting. he whole of the rooms and lobbys to be three coat plaster. kitchen, closets, passages, and presses, two coat ditto. Three ns below, three above, and both lobbys to have neat plain ices.

he front door to have a good nine inch three bolt lock, with e six inch patent hinges; the kitchen a stock lock and sneck; wash-house the same; the three best rooms six inch mortise s, and four inch patent hinges; the bed-rooms seven inch locks, and four inch hinges; the presses to have good locks; tair to have a cast-iron rail and cherry-tree cape.

he estimates are calculated, for the building materials, to be within one mile. The whole of the timber, except the finish-to be from Spey; and the finishing, of American.

Detailed Estimate of the Farm-House, (Plate 9.)

Mason's Work.

Y.	F.	I.		L.	s.	d.		L.	s.	d.
18			Of ruble building . .	8	0	0	is	124	0	0
	208		Of polished pavement	0	1	3	—	13	0	0
	405		Of droved pavement .	0	1	1	—	21	18	9
	222		Of vents	0	0	6	—	5	11	0
	1033		Of droved ashler . .	0	1	2	—	60	5	2
	84		Of polished hearths .	0	1	3	—	5	5	0
	126		Of polished jambs . .	0	1	2	—	7	7	0
	189		Of stair steps . . .	0	1	6	—	14	3	6
								L.251	10	5

Carpenter's Work.

R.	*Y.*	*F.*	*I.*		*L.*	*s.*	*d.*		*L.*	*s.*	*d.*
	128			Of joisting	0	4	8	is	29	17	4
	212			Of flooring	0	5	0	—	53	0	0
	91			Of sleepers	0	3	0	—	13	13	0
	256			Of ceiling lath . . .	0	1	0	—	12	16	0
	183			Of roof and sarking .	0	6	4	—	57	19	0
		102		Of peens	0	0	8	—	3	8	0
		132		Of square and round battens	0	0	4	—	2	4	0
		206		Of wall plates . . .	0	0	4	—	3	8	8
	114			Of roof on the wings and sarking . .	0	6	4	—	36	2	0
		312		Of windows glazed .	0	3	6	—	54	12	0
	9			Of 1¾ inch pannelled doors	0	13	6	—	6	1	6
	32			Of 1½ inch pannelled doors	0	10	6	—	16	16	0
	12	5		Of ¾ inch deal doors .	0	5	0	—	3	2	6
	5	5		Of 1¼ batton doors .	0	7	6	—	2	1	8
		24	6	Of bead and flush doors	0	1	6	—	1	16	9
	30			Of bound shutters and window linings .	0	10	6	—	15	15	0
	14			Of lath and plaster, breasts and scuncheons	0	1	8	—	1	3	4
		132		Of windows, architraves, and grounds	0	0	10	—	5	10	0
		300		Of door architraves	0	0	8	—	10	0	0
		950		Of facings, capes, and skirting . . .	0	0	4	—	15	16	8
		462		Of base and surbase .	0	0	8	—	15	8	0
		442		Of door standards . .	0	0	5	—	9	4	2
	246			Of lath and standard partitions . . .	0	3	2	—	38	19	0
		77		Of jamb mouldings .	0	0	8	—	2	11	4
		120		Of safe lintels . . .	0	1	0	—	6	0	0
		78		Of stair, steps, and risers for nursery .	0	1	0	—	3	18	0
		22		Of hand rail and cast iron	0	4	6½	—	5	0	0
		184		Of shelving	0	0	8	—	6	2	8
	156			Of ceiling joists . .	0	2	6	—	19	10	0
									L.451	16	2

Slater's Work.

R.	Y.	F.	I.		L.	s.	d.		L.	s.	d.
9	9			Of Easdale slating . .	8	0	0	is	74	0	0
				7 cwt. of milled lead .	2	0	0	—	14	0	0
									L.88	0	0

Plaster Work.

R.	Y.	F.	I.		L.	s.	d.		L.	s.	d.
	1096			Of plaster	0	0	7	is	31	19	4
		484		Of plain cornices . .	0	0	6	—	12	2	0
									L.44	1	4

ABSTRACT OF THE WHOLE.

	L.	s.	d.
Ironmongery, such as locks, hinges, &c.	L. 11	16	0
Amount of mason work, - -	251	10	5
Ditto wright work, - - -	451	16	2
Ditto slating and lead, - - -	88	0	0
Ditto plaster work, - - -	44	1	4
Total	L. 847	3	11

11. *Specification and Estimates of the Farm-Offices,* (*Plate* 8.)

The foundations to be dug one foot deep, or deeper if found necessary; the walls to be eight feet high from the level of the door soles, and to be two feet thick, of good ruble building, well packed with lime. The extent of the different houses to correspond with the figures marked upon the plan. The height of the walls of the mill-barn to be twelve feet above the door-sole. All the corners, ribbets, and lintels for doors and windows, the outside corners of gateways, and pillars for cart-shade, to be broached ashler. The wall or dyke dividing the two courts, to be one foot eight inches thick at bottom, one foot four inches at top, and eight feet high including the foundations. The stables, byre, mare and foal, and calf houses, to be causewayed in the usual manner.

Wright Work.—The scantlings of roof to be six inches at bottom, five at top, and two inches thick, placed twenty inches asunder; the roof to be to the square, with a bauk placed half height, five by two inches. Above the cart-shade to be joisted and floored for a granary; the joist to be nine inches by two and a half, and placed eighteen inches asunder, and covered with common flooring, grooved and tongued, and well nailed. The stables to be fitted up with traverse posts, six by five inches behind, and four by five inches before. The boards to be one inch and a half thick; six feet high before, and five feet high behind. The racks to be three feet wide; the staves placed three inches wide, made round, and to run in the sides; the sides to be four inches and a half by two inches. The mangers to be seven inches wide at bottom, eighteen inches at top, and ten inches deep of one-inch and a quarter deal, with a breast tree, five inches by two and half. The stable to have a joist on the top of each traverse, six inches by two. The beams in open and cart-shades, to be twelve inches by six. The mill-barn to be laid with common flooring, grooved and tongued; the joists to be nine inches by two and an half, and twenty inches separate. The millwright to find the beams for the machinery. The byre to be fitted up with stakes, sole, and runtrees in the usual way; all the outside doors to be plain one inch and a quarter batton, beaded in the joints with three bars in the height, hung with good and sufficient crooks and bands, and to have good stock-locks, suited to the different places to which they are applied. The covers for turnip boles to be one inch thick, hung with crooks and bands, and a catch to keep them up when open. The windows in potatoe-house and mill-barn to be three feet by two, and one inch and three quarters thick, and glazed. The stables to have flights made in the usual way, two feet square. The gates into the courts to be framed with three one inch and an half thick bars, eight inches broad, with a transverse brace same size, and to be covered on the face with three quarters of an inch deal, and fixed with a sneck, and hung with sufficient crooks and bands.—The roofs to be all covered with tile of good quality, carefully laid and well pointed. The whole of the timber to be of Spey, and all the work to be executed in a substantial and workman-like manner.

Estimate for the Farm Offices.

Mason work	L. 351	19	0
Wright Work	502	11	1
Tiling	133	2	4
Locks, crooks, and bands	10	12	0
	L. 998	4	5
Expence of eight cottages	325	4	0
Ditto of farm house	847	3	11
Total expense of building a complete house and farm stead	L. 2170	12	4

From these specifications and estimates, any builder will be able to calculate the expense of such constructions in any part of the kingdom.

CHAP. III. APP. No. 11.

ADDITIONAL HINTS REGARDING THE CONSTRUCTION OF FARM-HOUSES AND OFFICES.

By Mr RICHARD CHRICHTON, Architect, Edinburgh.

1. *Farm-houses.*—Where the ground is nearly level, the parlour floor should be elevated eighteen inches above the surface, and the kitchen and its offices may be sunk to within six inches, and placed, either as wings to the ends of the house, or as a tofall, or lean-to behind. A drain should be built all round the house, close to the walls. All the surface earth within the walls, to the depth of one foot, should be cut out, and filled in with dry stones and forge ashes; and the passages in the ground story, with the floors of the kitchen, scullery, pantry, and dairy, laid with dressed stone, or with bricks. The parlour floors laid with one inch thick deal on scantling, covered with lime-water or tar, and supported at short distances.* The roof covered with slate, all the outer walls of the room lathed and plastered with three-coat plaster, the scullery and pantry with two-coat plaster. The parlours and best bedrooms to have plaster cornices, with double hung sash windows, architraves to doors and windows, and base mouldings round the floor. The other apartments finished with beaded sciftings and facings.

2. *Barns.*—Barn floors are sometimes laid with deals upon scantling, but more frequently with other substances; in both cases, it is found absolutely necessary to exclude all damp, by drains on the outside where requisite, and by digging out all the earth from the inside, at least one foot under the level of the floor. When a clay floor is made, the whole is levelled and filled up, to within four or five inches of the intended floor, with dry stones and gravel. A layer of well-wrought clay, is then to be laid over the whole, regularly spread and beat, or rolled down, observing, that no more water is used, than is absolutely necessary to keep the clay in one solid body; it is then rutted across with a trowel, in the same manner as the first coat of plaster on walls, but deeper. A mixture of clay, brick-dust,† and pounded forge ashes, is next wrought up for the upper stratum, and

---

* In all cases, where deal floors are laid next the ground, the scantlings should be covered over with boiled tar, or soaked in strong lime-water, to exclude the effects of damp. Air-holes are sometimes left in the walls opposite to the ends of the spaces between the scantlings, for a circulation of fresh air; but as this renders the floor above cold, by the air getting up through the boards, the most effectual method, where the soil is damp, will be, to build up the whole space betwixt the scantlings, close up to the floor, with stone and lime. In most cases, however, the covering with tar or lime-water will be found quite sufficient.

† Where brick dust cannot easily be got, burnt sand will do equally well.

mixed with slacked lime; the whole thoroughly mixed and beat up; afterwards formed into a heap, and left for a few days, when it is again beat up, spread compactly on the floor, and made as smooth as possible. The drying should not be forced by burning straw, &c. which would occasion cracks, and the floor should not be trod upon till quite dry. *

3. *Granaries.* —When judiciously situated, proper attention to the construction of granaries, will render them perfectly dry, and, with the addition of windows in the opposite walls, it will be well aired. For the exclusion of vermin, it is recommended to give the walls on the inside, a coat of smooth plaster all round, close to the joists and ceiling, at least two feet downwards; the floor should be close fitted to the walls, the top of the wall built up close to the covering of the roof, the ceiling white-washed, and the whole of the walls plastered : the door to the barn, and the one to the outside for loading the carts, to be close fitted; all the windows to be fitted with weather-boards, well painted, and canvas blinds within, to exclude insects of all kinds. By good attention to these, and cleanliness, vermin may be excluded from granaries, particularly if care be taken, to keep the doors shut at all times when not used ; as no rats or mice can remain long in any place without water; and should they be obliged to force their way out, by cutting through the floors, doors, or ceiling, their holes would easily be perceived and stopt up.† Where the granary is of small dimensions, and the grain at times lying too deep on the floor, it may be ventilated by placing a number of ventilators in the form of an inverted Λ, or common wooden spout, across from the one side wall to the other, having an opening through the wall at each end, covered with a grating, the same as the windows.

4. *Stables.*—The bottom (or sill) of the windows of stables, to be five feet from the floor, three and a half or four feet wide, and two feet high, glazed in fixed frames, over which are moveable weather boarding, of the same width, and one foot high, to be opened and shut as may be necessary for admitting fresh air, and ventilating the stable.

The floor of stables should be paved with ruble stones laid lose and even, having a gutter along the bottom of the stalls, 'hich should be bedded in clay, and made as close and tight as ossible, as most of the urine in stables is absorbed by the openess of the paving, and emits a constant nauseous smell: the floor nder the stalls, should have a small declivity towards the gutter, o carry off the moisture, but as little as possible, as animals do ot stand easily on a slope, say three inches for the whole length f the stall, particularly if a space, in the centre of each stall, and bout half way up from the gutter, is laid with free-stone, scooped out to convey the moisture to the gutter. Where the pavement, particularly of the gutters of the stables, is tight, the moisture may be conveyed from them, by a small drain, into the reservoir for urine; if so, the top of the drain, opening into the table, should have a cast-iron air-trap placed in it, to prevent he smell from the reservoir, getting into the stable.

---

* East Lothian Report, p. 37. In flooring, the compound of clay, slacked lime, &c. was formerly very general; but whether it arises from the defective mode of manufacturing it, or otherwise, it is found not to stand the broom; and good clay, where it can be got, is now generally preferred. *

† Rats may be effectually prevented from burrowing under the foundation of houses, by making an off-set of stone or brick, about 2 feet in breadth and 18 inches below the surface, and by carrying up a perpendicular wall from the edge of this off-set, to within a few inches of the ground. The adoption of the same plan inside, will prevent the burrowing of these animals in cellars; for rats always burrow close to a wall, and finding their perpendicular course impeded, they take a horizontal direction as far as the off-set continues, when they are again stopped by the outside wall. Thus baffled, they ascend and go off.

It would be a great preservation from vermin, if, in forming he floors of stables, or any such buildings, the space under them, or about eighteen inches deep, was cleared out, and well packed with dry gravel, or small land stones, allowing no more depth f sand above it than just sufficient to receive the paving-stones. f the corn-bin is placed in the stable, it should be covered with hin sheet-iron.

The doors of stables, should not be less than three feet eight nches of clear opening. They should not be placed in an exposed situation, particularly when opposite to the stalls; they should pen outwards, which gives more room within the stables, and, n case of fire, would be of material service. They should not e divided into two halves, which has occasioned many accidents. The keys should be divided by a hinge, so as to project s little as possible.

The entrance door to a stable, is best placed at the end, with loors to put out the dung into the *courtin* or straw-yard; proper ttention to these, and the opening and shutting of the weather oarding over the windows, will keep the stable at any degree f heat required; and by making a few openings in the roof, here will be a constant ventilation, and the current of air, which asses above the horses, will render the stable sweet and fresh, without exposing the horses to cold.*

5. *Poultry-house.*—Of late some tenants, after erecting a poultry house, or hen-house, on the ground-floor, have built a pigeon-

---

* Very convenient and useful ventilators may be formed, in any building where the joists are laid from the one side wall to the other, by shutting up the pace, between the under edge of two joists, and the floor above them, and thus orming a case, from the one outside wall to the other, admitting the air from holes through the wall at each end, and perforating the under side of this case next the ceiling, to let off the air in the apartment. These cases between the joisting, may be formed at every twelve feet distance, and the ventilation regulated, by sliding boards to open or shut the openings next the ceiling.

house above it. These houses are sometimes erected in the centre of the feeding-byre; and as the pigeon-house is commonly raised several feet above the roof of the byre, it renders the whole building more light and airy, especially if a neat fane, or weathercock, is placed on the top of it, which is not an expensive, and will be found a useful article. Indeed every farmer should have one on his farm-stead, for the purpose of showing him the quarter the wind blows from every morning when he rises; and he may thus be enabled to guess the probable weather he may expect in the course of the day, and to give the necessary directions to his overseer and servants, better than otherwise he could do.

CHAPTER IV.

APPENDIX, No. I.

ON THE RELATIVE ADVANTAGES OF GREAT AND SMALL FARMS.

By Dr GEORGE SKENE KEITH.

WHAT are the particular recommendations of large, and also of small farms, has been long and keenly agitated. It is proper to examine attentively the merits of this controversy, which has been carried too far by the disputants on both sides, and to state impartially the arguments, which are adduced in support either of large or of small farms.

In behalf of large farms, it is urged, 1st, That the large farmer is a man of far more capital than the small farmer; that he is a man more liberally educated, and has more skill in his profession than the other; that, for the most part, he possesses a greater spirit of enterprize, and that his mind, if not naturally more comprehensive, is more accustomed to take extensive views, than if he moved in a more limited circle, was constantly employed in minute details, and frequently engaged in servile labour. 2d, That his working cattle are stronger and better fed, and that they go over a greater proportion of land in tillage than those of the small farmer can do, because, owing to the small size of his farm, he often cannot find work for them. 3d, That, owing to his command of labour, from his number of servants and horses, or working cattle, the large farmer, in the busy seasons of the year, is able to carry on, at the same time, the ploughing, manuring, sowing, harrowing, and rolling his fields, which the small farmer cannot do, owing to his very limited number both of servants and horses; and that there is generally a better arrangement of the labour on a large farm, where indeed it is the farmer's fault if the economy of the farm is not good, seeing every man and every horse has his proper task 4th That the expense of labour, (including the wages of farm servants and day labourers, and both the price and maintenance of horses) is greater on a small than on a large farm. 5th, That the expense of enclosing the boundary, and subdividing the fields, is also far more considerable on many small farms than on a single large farm. 6th, That the small farmer is, for the most part, unable to purchase that variety of useful implements of husbandry, which, by abridging labour, are a saving of expense to the large farmer; and that though he could afford to spare the money, it is not *tanti*, or that the advantage gained, will not to him equal the expense incurred. 7th, That the small farmer cannot purchase seeds of different kinds, iron, wood, and other necessaries for a farm, from a wholesale merchant, so cheaply as a large farmer does, who pays the lowest price, because he imports or buys large quantities. 8th, That the small farmer has not the same intelligence of the state of markets which the other has, nor can obtain the same price for his small number of live stock, or for his few quarters of corn, which the large farmer generally receives, from the dealer in cattle, or the corn merchant, because he has a greater value of both in the market. And, 9th, That where farms are small, much more land is withdrawn from cultivation, than where farms are large, owing to the numerous buildings, approaches, stack-yards, &c.

Some of these arguments are conclusive in favour of large farms, where the situation and circumstances admit of them; yet the advocates for small farms urge the following answers, in behalf of the small farmer.—1st, That where a man's capital is proportioned to the extent of his farm, it is to him sufficient; that both from natural talents and acquired knowledge, (neither of which is necessarily connected with the size of a farm), the small farmer is as able to cultivate the portion of land which he occupies, as the large farmer is able to cultivate a larger portion; that the small farmer is often found as enterprizing as the large occupier of land, where he meets with the same encouragement; and that from his industry and economy, he is frequently enabled to add to his capital, and to rent in a few years a larger farm, which he could not have done, if he had not first had a small one. 2d, That if his working cattle are not always so well fed, nor go over so much ground in tillage as those of the large farmer, they are able to do all the work that he requires, and generally maintained at much less expense, because the small farmer does not allow so much corn to his horses; though he frequently disposes of his working cattle in the prime of their strength at a high price to the large farmer, to whom both the first purchase and the future maintenance of his horses are a heavy expense. 3d, That from the great distance to which a large farmer is obliged to drive manure to his fields, and to carry produce to his farm steading or stackyard, owing to the great expense of farm labour, he pays, in most cases, two shillings an acre, and in many cases, four shillings an acre, over his whole farm, or must employ at least two, frequently four horses more than a number of small farmers require to cultivate an equal extent of land, because their fields lie much nearer to the stable, the stackyard, and the dunghill. 4th, That in a very busy season, the small farmer feeds his horses better than usual, and works longer than the large farmer's servants can do, because his fields are nearer to his farm-stead, and because he is farmer, overseer, and servant, united, in the season of sowing, harvesting, and when great exertion is requisite. 5th, That he is generally able to purchase all the useful implements of husbandry which are suited to his farm, and uses substitutes for those which he cannot afford to purchase. 6th, That he makes money by the sale of a number of small articles, which the large farmer disregards; and that by retailing the produce of his farm in small quantities to private families, or in the different markets, he does not stand in need of that *middle man*, a corn merchant, but gets a higher price than is obtained by the large farmer, who is a wholesale dealer; and with a little ready money, and also with personal attention, he is able to purchase what he needs for his farm, on as reasonable terms as the large farmer.

Besides these arguments, which are urged in favour either of large or small farms, and which sometimes belong to the one, and sometimes to the other, there are two which are claimed by both, but which do not properly belong to either. The first is—Which of the two requires most expense for farm-houses and offices? And the second—Whether large or small farms are necessarily most favourable to population? In regard to the first, a number of small farmers do not require, certainly do not receive, from the landholder, more money for building and repairing their houses in the course of their lease, than what is usually allowed to a large farmer occupying an equal extent of land. Nor do they require this all at once; but gradually, as their leases fall in; and then they receive it, for the most part, not from the landholder, but from their predecessors. (This is the case in Scotland; different, no doubt, from the practice in England.) —With respect to the second, viz. the population of large, compared to that of small farms, it is different in different districts, and is affected by various circumstances. In the corn raising counties of Scotland, where coal is abundant,—where married servants and day-labourers are all attached to farms,—and where much labour is employed in weeding or hoeing green crops, large farms add to population. But in the cattle rearing counties, where fuel is scarce, high priced, and brought from a great distance,—consequently, where fewer labourers are attached to farms, and *unmarried servants* are generally hired by the farmer,* the uniting of several small farms into one large farm, is always accompanied by a decrease of the population.

After thus stating impartially the merits of the general question, we would now inquire, In what cases a proprietor should let his land in large farms; in what situations he should let it in farms of a moderate size; or parcel it out in small lots.

1. Wherever there is a considerable extent of hills or mountains, which are chiefly adapted to the pasturing of sheep, with

---

* This is often the fault of the farmers, and not of the ſize of their farms. In ſome places, they actually reckon little upon the victuals of unmarried ſervants, becauſe they are produced upon the farm; and inſtead of hiring a married man, even when they have houſes unoccupied, and when his family might be always ready to work in the ſummer and harveſt, they muſt have unmarried men, at and above 20*l.* yearly, which, with victuals, will generally equal 40*l.* A married ploughman does not get more than from 30*l* to 35*l.* even in the beſt cultivated counties. Yet want of fuel is the principal cauſe why unmarried ſervants are employed in many diſtricts.

only a small proportion of arable land, there nature has rendered the land proper to be occupied by a sheep farmer. And as one shepherd can tend a very numerous flock, and as two or three persons acting under him can watch over the sheep which depasture a great extent of land, sheep farms ought to be of very large dimensions, where a landholder has ground contiguous. It is an observation of a very competent judge, (Dr Singer, in his Survey of Dumfries-shire,) that 'a sheep stock below thirty score, or 600 sheep, is too small to afford any profit;' and as in that county, two sheep are allowed to three acres of mountain pasturage, a sheep farm ought not to be below 900 acres. There is, however, one exception to this general rule A man may chuse to herd his own flock, and may pay as great a rent as a large farmer. In fact, there are many sheep farms below 900 acres; though that extent may be little enough for Dumfries-shire.

2. Wherever there are long strips of arable land in valleys between hills, or in large meadows along the banks of rivers, while the pasture on the hills is adapted to the raising of live stock, the landed proprietor should have his arable farms laid out in such dimensions as the hills or intervening streams permit to remain unbroken, or, at any rate, do not render improper to be united. Here farms will rarely be found to exceed 200 arable acres, frequently not 100; but they can seldom be let to advantage, unless each farm contains at least 50 acres, or what will constantly employ a pair of horses; besides an extent of pasture for maintaining live stock in the summer months. In such a district, the raising turnips and sown grasses, will not only render the arable land more productive, but will increase both the food and the size of black cattle, by the improvements in agriculture. But here in general it will be found that the arable part of farms can only be planned of a moderate size. Indeed, such narrow tracts of arable land should be always added to the hilly grounds, and generally are so, because the proprietor knows they augment the value of the high lands that are not arable.

3. Wherever there is a considerable extent of arable land, generally flat, and not diversified by hills, or divided by streams of water, there the great landholder should give a decided preference to large farmers, as possessing in general most skill, capital, and spirit of enterprize,—the best working cattle, whether horses or oxen, and the most valuable implements of husbandry; and also as raising the greatest value of produce on their farms, while they cultivate the soil in the most correct manner. The size of an arable farm in the champaign country of Scotland, should not, where the ground is both level and unbroken, be less than 200 acres, (unless where the ground is of uncommon fertility, or in the vicinity of a populous town), and may indeed extend to 1000. But if it exceed 507 Scotch, or 640 English acres, the expense of driving manure to the fields, and carrying produce to the home-stead, becomes very considerable. Cow-houses, or

feeding byres, therefore, ought to be built at the remote parts of the farm.

4. Even in a flat country, in which there is much arable land, there ought to be villages on every great estate, (not manufacturing towns only, but farming villages), that there may be a competition among workmen, wherever there is a demand for labour. No blacksmith, or house-carpenter, or shoemaker, should, *by his situation only*, have the *monopoly* of the work *on a great estate*, as was formerly the practice But while the married farm servants should reside on the farms, and be subject to the farmer, those villagers should all hold their cottages on long leases from the landed proprietor. They should also possess a few acres of land on shorter leases, for maintaining their cows, and supplying them with vegetables.

5. It is obvious that in the immediate vicinity of populous towns, small farms should be let to common carriers, cow-feeders, and gardeners. They can always pay a higher rent than could be paid by a large farmer, because they subsist chiefly from their occupations, or from the retail of farm produce.

6. Where there is a piece of broken ground, or a part of a landholder's property lying detached or insulated, and especially where such possessions are adapted to the raising of live stock, there a small possession, varying in extent from two to twenty acres, may be very properly let to a small farmer, who depends partly on the produce of his small farm, partly on raising a young horse, or a few young cattle, annually,—partly on his wife's management of his little dairy,—and if he rent only a few acres, partly on his own industry, not in working as a day labourer, but in executing job work by the piece. It frequently happens that such small occupiers of land have, by these means, rendered their small possessions of far greater value to a landholder, than if he had let them to a large farmer; and have themselves acquired a genteel competency.—In the county of Salop, in England, and in the vale of Clydesdale, in Scotland, a number of excellent horses have been raised by such small farmers, who have both supported their families, and acquired capital, by such methods.—In Aberdeenshire it is well known, that small farmers in this situation have improved their detached possessions, and by being good *market men*, have acquired a considerable capital. There is one in particular, who, with a small farm of eight acres, has, by the above means, acquired near 1000*l.* of capital, and who has so greatly improved his small possession in the course of fifteen years, that it is now worth at least seven times its present rent.

It cannot, however, be denied, that, in general, the principal improvements have been carried on by large farmers; and that the most correct husbandry, and greatest quantity of produce on a given extent of land, are always found where the farms contain a great extent of arable land. Therefore in such a situation the land should be let to large farmers.

CHAP. IV. APP. No. 2.

A MORE PARTICULAR ACCOUNT OF THE CHARACTER OF THE FARMERS IN THE DIFFERENT COUNTIES OF SCOTLAND.

By DR GEORGE SKENE KEITH.

IN the first district, ' many of them have received a classical, and some a liberal education. While the cultivation of the fields, and the state of the flocks and herds in Roxburghshire, are pleasing proofs of the active industry and professional knowledge of the farmers; the style of their dress and of their table, indicates their easy circumstances; and the general strain of their conversation and manners, discovers equal frankness and candour. '—The farmers in Berwickshire are generally most respectable and intelligent; and their success has been deservedly proportional. They have almost universally risen above the rank of peasantry in knowledge, education, and manners; assimilating in many respects to the character of country gentlemen, In every corner of the county they are to be seen carrying on extensive and costly improvements, which they are enabled to do through the sufficiency of their capitals and the security of their leases—*the former derived from their own successful and intelligent industry, or that of their fathers; the latter from the good sense of their landlords.* '—' In point of enterprize, information, and professional skill, the farmers of East Lothian are entitled to rank with those of any other district in the kingdom. This is ascribed chiefly to the example of a perfect cultivation set by many of their ancestors, joined to the capital possessed by most of them, and to the good education they receive; which in many instances is perfected at the University, and which, by giving them liberal views early in life, fits them for that intercourse with their brethren on both sides the Tweed, by which they are enabled to acquire the most correct ideas of every useful improvement, and even to make a respectable figure in conversations upon scientific and literary subjects.' To this it may be added, that their general character for integrity, like the complete fallows of East Lothian, is pure and unsullied.—' The farmers in Mid Lothian are, in general, an industrious, intelligent, and respectable body of men. In the vicinity of Edinburgh, many of them are speculators in farming, who chiefly reside in that city, and are engaged in different professions. A few, from a strong inclination for rural occupations, have abandoned their former employments; and though at first liable to error from the want of practice, commonly in the end make a distinguished appearance.—Others having risen from the lower ranks in society, and acquired some property, are ambitious of being found in the superior classes of husbandmen. Void of theoretical knowledge, sometimes deficient in common education, their unremitting industry, and original habits of economy, stimulated by their laudable ambition to ameliorate their condition, have produced some examples of cultivation that are an honour to their country. But the most important class, including three-fourths of the whole, consists of the original stock of farmers; who, instead of regulating their conduct by the practice of their forefathers, have availed themselves of their opportunity of acquiring knowledge, from living in the vicinity of Edinburgh, and have made every exertion to make themselves masters of their profession, and to make the science of agriculture keep pace with the other arts and sciences, which have so rapidly advanced in this age and nation. They mix at an early period of life with society, and hence acquire the habit of transacting business with ease and accuracy;' and from the multiplicity of sales and purchases, they may be considered as retail dealers in agricultural produce.—'In West Lothian, thirty years ago, there were many intelligent, active, and opulent farmers; but their number has been greatly increased of late years, from the proprietors making a proper choice of tenants, and granting leases of a reasonable length,—from the influence of good example,—and from the rise of the price of cattle and all the productions of the soil.—The tenants on the small farms have not improved in the same proportion as those of the greater ones.'

Even in the firſt diſtrict there are a few exceptions to theſe general rules. Parſimony and frugality diſtinguiſh the farmers in the remote parts of Roxburgh, Berwick, and the three Lothian counties; and the greateſt ſimplicity of manners is found in places which are at a diſtance from cities or populous towns. But, on the whole, the character of the farmers in theſe counties, is intereſting, intelligent, and highly reſpectable.

In the ſecond, or paſtoral diſtrict, where the rearing of ſheep, and other live ſtock, is the great object, the farmers reſemble thoſe of Lammermuir, and Liddeſdale, where ſheep ſtocks are general, more than they do the Lothian and Berwickſhire farmers, where a correct ſyſtem of agriculture is generally practiſed.

'In Peebles-shire, the ſheep farms being the moſt extenſive, and requiring the greateſt capital, the ſtoremaſters conſtitute the moſt opulent claſs, and are the beſt informed. They generally tranſact their buſineſs in perſon;—are thus formed to habits of acuteneſs and activity;—and have the more opportunity of acquiring ſome knowledge of the world. The ſmall farmers of arable land, poſſeſſed of leſs capital, and generally obliged not merely to overſee, but to work upon their own farms, are neceſſarily more confined than the ſheep farmers in their range of obſervation and means of information, which ſeems the chief cauſe of the late introduction into Tweedale, of improvements in the cultivation of the ſoil.'

'In Selkirkſhire, a few, from being ſhepherds, have riſen, with a fair character, to rent farms of conſiderable extent, and retain the ſimple homely manners, dreſs, and fare, of their primeval occupation. But by far the moſt numerous, conſiſts of the ſons of farmers; and of theſe, ſome are wonderfully tenacious of ancient practices: Others venture on innovations with ſlow and timid ſteps, but grow bolder by the experience of their own and their neighbours' ſucceſs. Several carry on improvements with a degree of ſpirit and ſkill which is not eaſily ſurpaſſed. Generally they are frank, communicative, and hoſpitable; and a few of them live in elegance and plenty. Attempts to deceive and over-reach purchaſers, are held in utter contempt by the better ſort; and on the whole they are very punctual in fulfilling their bargains.'

In Dumfries-shire, with a great diverſity of character among thirteen hundred farmers, (their ſuppoſed number,) it is remarked in general, that the ſame perſon 'is not equally ſkilful in raiſing and in dealing, nor in grazing and tillage.' No doubt the diviſion of office is uſeful in ſociety, as well as the diviſion of labour. 'The farmers of the old ſchool are diminiſhing in number every year; improving farmers are now appearing in every diſtrict; and gentlemen of ſuperior attention and ſkill have been found in almoſt every part of the county; and ſome of them have been ſetting before their neighbours, examples of the beſt management, for many years. A conſiderable number of farmers are reſpectable in point of ſubſtance, intelligence, and character; and ſome of them are diſtinguiſhed alſo for profeſſional ſkill and enterprize. But the education of others is defective, and their accommodation, habits, and views, are comparatively weak and mean.'

In Galloway, attention to the rearing of live ſtock, and to both preſerving the beſt breeds, and raiſing the ſize by good keeping, are more prevalent than agricultural knowledge. But a ſpirit for improvement has of late become prevalent: marl and other manures, have been laid on in great quantity; and the farmers, within the laſt forty years, have riſen in the ſcience of cultivation of the ſoil, as well as in general and profeſſional knowledge.

On a general review, the farmers of this paſtoral diſtrict, though far inferior to thoſe of the preceding one, are emerging from poverty, ignorance, and retired habits, to knowledge, induſtry, and opulence.

In the third diſtrict, or Weſt Lowlands, where the farms are generally of moderate dimenſions, the character of the farmers is very different from that of the farmers of Roxburgh, Berwickſhires, and the Lothians.

'Yet in Ayrſhire, their induſtry and enterpriſe have been conſpicuous. Many have launched into improvements far beyond their capital, and often beyond the boundaries of prudence. They are ſocial, and treat their friends with the greateſt hoſpitality; yet ſobriety has been long one of their leading characters. And the farmers of the lower order are remarkably hardy, induſtrious and frugal.'

'In Lanarkshire, they are hardy, active, and laborious, well qualified to struggle with the difficulties of soil and climate, and equally frugal and economical. But in general they are not men of much reading, or overburdened with unwieldy knowledge. Yet they freely communicate with one another, and learn such practices as tend to improvement.'

'In Renfrewshire, the farmers are a frugal and industrious class of men. Formerly they were indolent, indigent, and attached to old habits. The small tenants fared worse than labourers and mechanics; but their number is now greatly diminished, and the condition of those that remain has been improved. In general, the possessors of larger portions of land are more affluent and independent; employ greater stock in the cultivation of their ground; are possessed of greater sagacity; and have always successfully prosecuted better schemes of improvement.'

'In Dunbartonshire, where the farms in general are so small, it cannot be expected that the farmers should be remarkable for their improvement and spirit. Some who have received a good education, carry on their operations with intelligence and sagacity; but the number bears a very small proportion to the great mass of the tenantry. In general, the Dunbartonshire farmers are tenants of the old school; men of limited education, following implicitly the practice of their fathers, or blindly copying the improvements of their neighbours. All their operations (except ploughing, which is for the most part well done) are executed in a very imperfect manner; and the produce comes vastly short of what it might be, were the same labour judiciously applied. These evils are much aggravated by the total want of capital in the hands of most farmers.'

Although commerce and manufactures have prospered very much in this district, and although many spirited improvements are carried on by persons employed in trade, yet the character of the farmers, however respectable as good members of society, does not rank high as cultivators of the soil.

In the central district, where there is the greatest difference in the soil, extent, and circumstances of the counties, there is also a great difference among the cultivators.

'In Fifeshire, the farmers are an active, intelligent, and industrious body of men. A great proportion of them have distinguished themselves by their spirited exertions, their skilful management, and the high state of cultivation to which they have raised their farms. A spirit of inquiry, a taste for improvement, and a laudable desire to excel in their profession, have of late spread very generally among them: and by reading, by observation, by mutual communications, and by experience, they have acquired much professional knowledge, which has led them to adopt the best plans of improvement. The alteration in their style and manner of living, is equally remarkable; and they hold a most respectable place in the community.'

In Kinross-shire, the farmers have, by their industry, both increased their capital, and have greatly altered the aspect of this small county; a great part of which is bleak, and highly elevated above the level of the sea.

In Clackmannan, which is of still less dimensions, the farmers in general are very correct cultivators of the soil. So great have been the improvements, that the county appears like a large garden.

'In Stirlingshire, this useful and respectable body of men has only begun to emerge from a state of poverty and insignificance. Graziers and speculators in cattle, were the first class of farmers who were able to accumulate some wealth; and this occupation requiring less personal toil, was more agreeable to them than the more laborious and unremitting cares of agriculture. But at length the cultivators of the soil have begun to assume the station which belongs to them in society.' And the intelligent author of the survey, ascribes the rapid increase of the rents of land, 'not to the exertions of the miserable and illiterate occupants of small possessions, but to the enterprises of farmers possessed of intelligence to comprehend the late discoveries and improvements in agriculture—and of sufficient stock to apply them successfully in practice.'

In the extensive county of Perth, where there is 'a great diversity of soil and even of climate—where there is a difference in the manners, in the wealth, and even in the language of the people, in different districts—and where the turn of thinking, both of proprietors and of possessors of land, is almost opposite, it is not surprising that the farmers should be in very different circumstances, and have very different habits of life. While some dwell in temporary huts in summer, in small hamlets in winter, and have only small portions of arable land, others have great merit, and are entitled to great respect. They are distinguished for their spirit, their industry, their enterprise, the liberality of their sentiments, the enlargement of their views, and their genius for improvement.'

In Forfarshire it is remarked, 'that though many adverse circumstances are unfavourable to small farms, yet there are very numerous examples, where, by persevering labour and assiduity, they have surmounted them all. They have not only drained and enclosed their small possessions in many instances, but have improved them by lime and marl, as well as by a proper intermixture of green crops and sown grasses. Nay, even the tradesmen farmers, possessing only from five to ten acres, are distinguished by their sobriety, their industry, and good management.

of them have been set down upon land that was good for ıg, which they occupy by a long lease or a perpetual feu, hich they have brought to a highly productive state. With l to the greater farmers, they are generally distinguished ir intelligence, their industry, and attention to business; e style of living of many of them though not so showy, ally substantial with that of the proprietors.'

the whole, in this fourth district, the farmers, in point fessional skill and spirit of enterprize, or in the scale of ltural merit, are, in general, next in order to those of the istrict.

he North-east Lowlands, or fifth district, there is the great- ference between the character of the farmers in the mari- arts, and those in the highland or inland divisions.

ı Kincardineshire there are many farmers whose condition egard to hard labour, to mean accommodation and plain is on a level with that of the meanest labourer. There are who enjoy the elegancies of life, and are as well informed ıy of the country gentlemen; and between these extremes are to be found in every possible gradation. But there ng all those classes, a decided attention to the interests of profession, as affected by industry, assiduous application, ricultural knowledge.'

the extensive county of Aberdeen, 'the native farmers e far advanced in life, are simple in their manners, gene- ery good judges of cattle, and excellent market-men; but tentive to a proper rotation of cropping, nor to the late im- ments in agriculture. The younger farmers who have got in d a great zeal for improvement, endeavour both to under- the principles, and pay great attention to the practice of lture. The greatest and most extensive improvements have ffected by them.—Besides both these classes, farmers who ome from the southern counties, induced to do so from ageous bargains and long leases, are distinguished by their ct ploughing and cleaning of the soil. It deserves to be ned, that, besides these three classes of farmers in the , there are a number of small feuars or farmers in the vi- of Aberdeen, who have trenched nearly 3000 acres, of ivated land, at an expense from 30 to 100*l.* per acre, and veral of the opulent merchants have villas and gardens, out a dozen of them hot-houses—and well cultivated fields h 60 years ago were covered with heath, with stunted urse, or blocks of granite.'

ı Banffshire, the small farmers, from habit and want of ion, are very much confined in their ideas—a natural con- ce of their depressed situation in life. They are for the art so much attached to the old system practised by their hers, that it is with the utmost difficulty they can be brought to adopt any mode of improvement. This character will also justly apply to some of the larger farmers: but others of this class, from their knowledge of soil, climate, and other circumstances of a local nature, from their general information, and that rational spirit of improvement, by which they conduct all their operations, are highly esteemed in the line of their profession.'

'In the counties of Nairn and Moray, the small farmer, though not in a degraded state as formerly, still is a poor man, conducting the labour of the farm by his own hand; unless he be a man who has followed some other avenue to consideration and independence. But agriculture is carried on by men of every rank from the peer to the peasant; and, with a few exceptions, by people of every character and profession. Hence the soil is in a state of increasing improvement—the face of the country greatly embellished—and the form and value of the cattle and horses greatly ameliorated.'

The two great counties which constitute the West Highlands, have farmers of very different characters. In Argyleshire, besides many tacksmen of extensive farms, who have a number of dependants, there are many small farmers. And it is worthy of remark, that in the parish of Southend, where few farms exceed 40 acres, much barren land has been reclaimed. But the farmers of this extensive county are in much higher estimation for the rearing of live stock than for raising corn; and in many parts of it, the people depend most upon the success of the fishery.

'In Inverness-shire there are several good farmers near the county town; but the number of thoroughly bred farmers, who have been regularly instructed in their business from their youth, and follow no other employment, is very small. A number of gentlemen also, several of whom have been in the army or navy, take farms, partly for pleasure, and partly from views of profit or convenience. But the most numerous class consists of those whose fathers and ancestors, for many generations, have followed the plough. They inherit, and blindly pursue, all the customs, prejudices, and errors of former times. The small tenants uniformly belong to this class. Besides these, there are others who possess an arable farm in one district, and a grazing in another. Such men are generally of an active and enterprising disposition. They display their industry in the cultivation of the farm—their judgement in the management of the grazing—and their dexterity in rearing, buying, and selling of cattle.'

The character of the farmers in the four northern counties, respects either the native farmer, or those who have come from the southern counties. In Ross and Cromarty shires, the native farmers (with the exception of a very few, who, owing to particular circumstances, have been spurred on to exertions allowedly not suitable to their inclinations) have proved themselves to be totally unfit to occupy the land. But such persons (natives of the country) as have had some education, are displaying great exertions—and on such a scale—as admits of their being beneficial to the country. A considerable number of farmers from different parts of the south of Scotland, have settled in Ross and Cromarty shires; and, from the improvements they have made, it is probable that ere long the whole arable land will be possessed by farmers, who come from the improved districts of the kingdom.

'In Sutherlandshire, the more opulent class are those gentlemen who have been in the army or navy, or in some important line abroad, and who have no landed property, but possess wadsets and farms for pleasure, and subset for profit. But the more numerous class, are the small farmers, whose fathers and grandfathers, for many generations, followed the plough, or attended the black cattle and goats upon the mountains; and whose means of professional knowledge are too confined to admit of change or amendment. The nature of the soil, climate, and short leases from their landholders, or tacksmen, discourage them. They are frugal and temperate in their habits; in spring and harvest they labour hard; and the winter and summer months are passed in ease, poverty, and contentment.'

'In Caithness, a few young men, from the south of Scotland, brought into the country as overseers (or grieves), to superintend the proprietors' farms or domains, for the purpose of introducing the practice of modern husbandry, have, from time to time, taken farms in this county; but, from want of capital or professional skill, or from not knowing the mode of farming best adapted to the soil and climate, have not produced better crops than what are raised by the native farmers. The principal farmers are intelligent gentlemen, who have been some time in the army, or followed other avocations in the southern counties of Scotland, or in England. They work up their farms for the most part upon the system of modern agriculture, as far as the state of the county will admit; but at a much greater expense than is done in the southward, and of course with less benefit to themselves. The smaller farmers, in general, are industrious, sober, sagacious, and moral in their behaviour.'

'Thus, it appears, that in these four northern counties, as well as in Argyle and Inverness shires, there is a kind of intermediate order of gentlemen, called *tacksmen*, between the landed gentlemen and the great body of the farmers;—that, in general, they are very intelligent; but derive only amusement or convenience from the farm occupied by themselves, while their profit is drawn from the rent paid by small farmers, who are wedded to their old customs, and are unable as well as unwilling to promote any improvements.'

'In the Hebrides, also, tacksmen possess leases of different lengths, from nine to ninety-nine years, and sometimes for a much longer period. But however respectable this character, and however proper it is to support that order of men in particular cases, and on certain estates, it cannot be denied that they have been instrumental, together with other causes, in keeping back the improvement of their country; and the very circumstances which, in one point of view, constituted their respectability, were highly unfavourable to the cultivation of their lands. Yet, that the existence of tacksmen, and that in considerable affluence, and high respectability, is not incompatible with rapid improvements and augmentation of rent, at least upon large properties, appears evident from the present state of Islay. The humane and enlightened Mr Campbell of Shawfield has about thirty gentlemen farmers as tacksmen, who are, generally speaking, an honour to their order, and promote the management of the estate, as well as the advantage of the country. Most of the improvements in that island have been carried on by these tacksmen, under the inspection, and with the approbation of the landholder. The tenants, also, who have the benefit of leases, have begun to follow the example of the tacksmen, in draining, enclosing, sowing grass seeds, and adopting a judicious rotation of crops, as well as in reclaiming waste land. In all the Hebridian islands the tenants are becoming more numerous, in proportion as the tacksmen are banished, or die out, from the different estates. They pay from 5*l.* to 20*l.* of yearly rent; and possess lands on terms somewhat similar to the tacksmen's tenures. But as they seldom have leases, they rarely attempt improvements of any kind. The fishery, and the manufacture of kelp, too frequently interfere with the interests of agriculture.

'In the northern isles, some of the farmers are men of considerable property and good education; but the great body of the profession must be characterized in different terms. The hinds, or ploughmen, in the southern counties, are in much more comfortable circumstances than one half of the tenants of Orkney, where the average of each farm in cultivation does not exceed eight acres, and these generally under imperfect management. Excepting in a few instances, the attention of the great farmer has not been much devoted to the improvement of the soil; nor will it be otherwise, as long as the kelp manufacture is not carried on as a separate profession. On one of the largest farms (consisting of 1400 acres, of which 240 are arable, and the greatest part susceptible of improvement, as sea-weed is plentiful within its boundaries), 100 tons of kelp are made annually. Yet the tacksman is not bound to manufacture kelp; and may apply the sea-weed to the soil, if he think fit to do so.' If he manufactured only half the quantity of kelp, and laid the other half of the sea-weed upon the land, the farm would soon be considerably improved.

Chap. IV. App. No. 3.

OBSERVATIONS ON LEASES,

By Mr Walter Thom.

As land-owners in general possessed more property than they could conveniently manage themselves, or were perhaps induced, by the love of ease, to avoid the cares of the husbandman, they gave grants of portions of their lands to tenants, or those who actually cultivated the soil, in consideration of an adequate recompense. The conditions of these grants were various, according to the manners and customs of the age and of the country. * Reciprocal protection and defence were anciently the powerful motives for entering into the lease, which was then more of the nature of a mere grant, than a mutual deed binding on both parties. The tenant possessed no capital to give importance to his rights; and, therefore, he was reasonably denied all power of disposing of his interest in the lease. † But when the state of society improved, and agriculture began to receive encouragement, certain obligations by both parties were stipulated; and leases assumed the appearance and character of mutual contracts, by which landlord and tenant were entitled to a fair division of the subject, in proportion to their respective contributions.

The lease in Scotland has been generally confined to securing the rights of proprietor and tenant; but being a personal contract, it was forced, according to the notions of the feudal law, to yield to the superior title of a charter and sasine. The interference of the legislature was therefore found necessary to preserve the tenant from being expelled by a singular successor, or new proprietor. An act was accordingly passed, (Ja. II. parl. 6. c. 17.) declaring, "that for the safety and favor of the poor people that labour the ground, that they and all others that has "taken or shall take lands in time to come frae lords, and has "terms and years thereof, that suppose said lords sell or analzie "the lands, the takers thereof shall remain with their tacks until the issue of their terms." This act evidently applies to the agricultural lease; "but custom has, from analogy," says Mr Erskine, "extended the enactment of the law, to tacks of mills "and of casual rent; *ex. gr.* salmon fishings, collieries, &c. and "of such other subjects as are *fundo annexa.*" § It seems therefore to be the law, that any lease comprehending lands, houses, mills, fishings, or other subjects *fundo annexa,* is entitled to the benefit of the statute; and the tenant is thus secured, during its currency, against singular successors. But to enjoy the protection of this act, the lease must be a written deed, expressing the names and designations of the parties, the time of its duration, and the yearly rent; and be also followed by actual possession. †

---

* Bell on Leases, Pref. p. 1. † Ibid. Pref.

§ Erskine. B. II. tit. 6. sect. 11.

The proper period of the duration of a lease has been the topic of discussion among agriculturists; and even our supreme court has found it difficult to settle the question by any rule of law; though it seems plain that the intentions of the parties, as expressed in the deed, should be the rule for determining all questions of that nature; at least when such question occurred in a court of law. That a rule, fixed and determinate, should not be applicable to this case, is not matter of surprise, for it is so combined with circumstances involving an extended view of the situation and interests of landlord and tenant, that it becomes more properly a question of equity than of law; and one which can only be settled by reference to the deed itself. As the endurance of the lease is only one of the many considerations that must have entered into the view of the landlord and tenant when they stipulated the conditions of their contract, it is apparent, that its duration may be, with propriety, for a greater or less number of years, according to the quality of the soil, or the amount of the rent, or other obligations imposed upon the tenant. It would be in vain to say, that a cultivator shall pay a fixed rent for a certain number of years, at the expiry of which his interest in the farm must for ever cease, without first considering whether the produce during that period will form a just compensation for the rent, expenditure, &c. he will have to advance. It is quite clear, that if the number of years be specified, the rent must be more or less according to the value of the subject. On the other hand, if the rent shall be fixed, the period of the duration of the lease becomes the question of discussion, and the point to be adjusted by the contracting parties.

Let us suppose, by way of illustration, that a proprietor possessed 200 acres of improved land, and 200 acres of barren, waste, or moor ground, which he wished to let separately to two tenants. It would be ridiculous, indeed, of this land-owner, to demand the same rent for both farms, on a lease of 19 years' endurance.* But if he were desirous to have the same rent for both, he would probably be obliged to give a lease of 1000 years of the moor ground; or, if he had determined to limit the grant of both to leases of 19 years, he would, perhaps, receive no more than 2s. 6d. per acre for the one, while the other might bring 40s. per acre, or the usual value of such improved land.

---

† Ibid. sect. 1.

* It is not for the interest of the parties that leases should much exceed 19 years. It never has been so for that of the proprietor. If the land requires expensive improvements, it is better to accept a lower rent upon a 19 years' lease, and give other encouragements, than a much longer lease, to which there are various objections.

The person who proposed to rent the improved ground, would naturally consider, that there would be no occasion to expend upon it more than the necessary disbursement for stocking, which would constitute his capital, and which it would be his duty to preserve, as well as to provide for his expenses, maintenance, &c.; and, to accomplish these objects, a lease of 19 years endurance might be deemed sufficient. But the person who wanted the barren or moor land would reflect, that the amount of his expenditure in the cultivation of it would be such, as to preclude him offering more than 2s. 6d. per acre on a lease of only 19 years. If granted, however, for a period of 1000 years, he would calculate, that in progress of time, he could recover the capital expended in the improvement of the soil, and loss of rent, till that improvement came into full action, and also obtain a fair compensation for his labour, &c. supposing the tack-duty to be 40s. annually *per acre*, or equal to the rent of the improved land. The proper duration of the lease may therefore be ascertained, by weighing and combining every circumstance connected with a transaction that conveys from one man to another the occupancy of the soil, and all the important advantages resulting from its cultivation.

Of late years, the price of corn has been comparatively so high, and the progress of agricultural improvement so rapid, that rents have greatly advanced; and, therefore, proprietors have been anxious to resume their lands as frequently as possible: accordingly, few leases are now granted for more than 19 years endurance. As the value of produce, and hence of land, depends upon so many contigencies connected with the prosperity of the country, and the nature of the general operations which take place in society, it seems to be equitable, that land-owners should obtain the command of their property, at the lapse of short periods of years. For, if from a combination of unforeseen circumstances, or any cause, such as the nominal rise of the value of money, which would affect money-rents, an unfavourable alteration in our national affairs should be induced, it is, in that case, but equitable, that the proprietor should sustain a proportion of the loss, and that the tenant should escape from total ruin, by the termination of his contract. On the other hand, if the country shall progressively advance in prosperity, and money continue to be depreciated, which would raise the value of lands in relation to money, and consequently affect the interest of the proprietor, it is equally fair, that he should enjoy part of the general prosperity, by frequently resuming, and reletting his lands at an adequate rent.

A lease of moderate endurance must be preferable to a long one, to both proprietor and tenant, for many reasons; but especially as the result of a transaction depending for many years cannot with certainty be calculated, and becomes a matter of chance, beyond the reach of human knowledge. A speculation, therefore, founded on no known data, but involving in its consequences the material injury of the one, or the probable ruin of the other party, is at all times extremely imprudent. When the tenants were *adscripti glebæ*,—from compact or inclination, paid their rents in produce or in services,—and agriculture was nearly stationary, no material alteration affecting their interest, or that of the proprietors, could be reasonably expected; and the length of lease was immaterial. But in an age of great intelligence, when human invention has improved the arts, and expanded science, the duration of the lease must be regulated by the nature and genius of the times, and all those circumstances which unavoidably result from the existing state of society.

Under this division of the subject, some notice may be taken of tenure by *rental*, which is a species of tack anciently in use in Scotland, but now little known. A rental is a life-rent tack by implication, accompanied by some peculiarities as to forfeiture, and determinable on the death of the rentaller.[*] These tacksmen were called *kindly tenants*, because they were received through favour, and admitted on the rent-roll, at the old tack-duty, in consideration of a grassum, or piece of money.[†] A rental must be completed by the delivery to the tenant of a written deed; as an enrolment in the heritor's court-book is only effectual against him and his heirs, but of no avail against a singular successor. The king's rentallers, by statute James VI. parl. 11. c. 69, *anno* 1587, were considered as heritable proprietors, and secure of their possessions, on payment of their rents, and a fine at the entry of each heir, according to custom.[‡] These rentallers of the king resembled copyholders in England, whose rights of succession are governed by the same rules as in other inheritances. A rentaller who assigned his right, without his landlord's consent, incurred the penalty of forfeiture, the *delectus personæ* being here proper; whereas, in a common lease, the assignation is only void; and this seems to be the only difference between rental and leaseholding.[§]

Elucidations of the nature of the Leasehold Tenure.

To enable a person to grant a valid lease, it is requisite, that he should be infeft in the subject, as the heir may not implement it, if his predecessor should die before completing his title.* A proprietor may grant a valid lease, notwithstanding his estate should be burdened with debt, as the heritable bond implies only a right of security that does not interfere with his common acts of administration.† But in regard to land, legal diligence limits the proprietor's power of administration; and what is denominated *litigiosity* has been introduced into our law, by which a *lien* is created over the subject, from the moment an adjudication or inhibition is executed, that prevents a sale, or even a lease from being effectual ‡. The same consequences will ensue from a sequestration, as it deprives the proprietor of the power of administration; ‖ and, by the law of entail, all leases contrary to the terms of the deed of tailzie are of no effect. § A liferenter can grant a lease during his own life. ** A minor, after the age of puberty, may let a lease with the consent of his curators; but a judicial factor can give a lease for no longer a period than during his continuance in office.

---

[*] Bankton, b. ii. tit. 9. sect 45.

[†] Bankton, b. ii. tit. 9. sect. 41.

[‡] Ibid. sect 43.

[§] Ibid. sect. 42.

The tenant's right, under the lease, extends no farther than to the fruits of the ground annually produced. †† Mines and minerals, with the power of working them on payment of the surface damage, and growing timber, are reserved by the proprietor, who, from his right of property, may also hunt on his tenant's farm. § The landlord's rent is secured to him by the law of *hypothec*, which conveys a tacit legal right, independent of any stipulation between the parties. The hypothec extends over the crop of each year for the rent of that year, and may be exercised by the landlord at any distance of time. It also extends over the cattle and stocking of the farm, for the current year's rent; but it continues over these last, only for three months after the last conventional term of payment. *

Although the produce on a farm may be retained as a security to the landlord for the rent of the current year, yet as each crop stands hypothecated for that year in which it is raised, the crop of the present year cannot be hypothecated for the last or any preceding year's rent. † From the right of hypothec flows the right of retention, without which it would be of little importance;

---

* Bell on Leases, p. 87. † Ibid. p. 88.
‡ Ibid. p. 88. ‖ Ibid. p. 89. § Ibid. p. 107.
** Ibid. p. 102. Erskine, b. ii. tit. 6. sect. 8.
†† Erskine, b. ii. tit. 6. sect. 9.

§ This may be doubted, if it is meant to assert that the law confers this right independent of mutual agreement. There has been only one decision by the Court of Session (in 1804), and it evidently proceeded upon a misconception of the state of the fields during the winter, as if no crops could be injured after the harvest—whereas there are sown grasses, turnips, and winter wheats, that may suffer as much in the winter as in the spring quarter. It was thought by several eminent lawyers, that a different decision should have been given. Landlords should therefore reserve this right in the lease, if they mean to claim it.

* Bell's Dictionary, article *Hypothec*.

† Bell's Dictionary, ibid.

and previous to the term of payment, the landlord is entitled to demand from a poinding creditor, either consignation of the rent, or security that it shall be paid. But after the term of payment, he can claim no more than that as much of the crop shall be left as is sufficient to answer his right of hypothec.

With regard to cattle, they stand hypothecated for the current year's rent only; and, in that respect, are differently situated from the crop.[‡] The practice of Scotch law allows three months after the last conventional term of payment of the rent, to render the right of hypothec over cattle and stocking effectual; but the landlord must bring his action against the poinder before the expiry of that time, if the cattle have been carried off the property, in order to preserve his claim of hypothec.[§] The right of hypothec is general over cattle, and does not prohibit the sale of part of the stock at a fair price, unless a sequestration has been executed; in which case, the landlord obtains a *lien* over each of them.

As to subtenants, the right of hypothec will be affected according to their situation, and the circumstances under which they stand in relation to the proprietor. If the principal tenant has the power of subsetting, a payment to him will free the subtenant's crop from the claim of the landlord, unless otherwise stipulated.

The interest of the landlord being so well secured by the right of hypothec, it is but equitable, that the tenant should enjoy a fair compensation for his labour and capital under the lease; which, accordingly, entitles him to the annual fruits with the free use and possession of the farm. Were the subject of the lease, therefore, or any considerable part of it, to be inundated, overblown with sand, or otherwise destroyed, so as to be rendered incapable of producing crops, it would revert to the proprietor, or a diminution of rent would be allowed, in proportion to the injury sustained.[*] Instances have occurred, indeed, where the court have found the rent not demandable, in cases of uncommon sterility, occasioned by the inclemency of the season. It is a maxim, in common law, that all bargains between man and man shall be founded in just and equitable principles; and it is not to be expected, therefore, that a tenant is to pay rent, when he receives no return, especially if no blame be imputable to his conduct.

The usual conditions of a lease, on the part of the landlord, are *warrandice*, which, whether expressed or implied, binds him to indemnify the tenant for want of possession, and to defend him against all encroachments on his right. On the part of the tenant, it is stipulated, that he shall stock the farm, regularly pay his rent, keep the houses in repair, and remove quietly at the expiry of the lease. Both parties bind themselves to perform their engagements respectively under a penalty. † Such are the ordinary conditions of a lease; but there may be a great variety of others, regulated by peculiar circumstances connected with the situation of the farm, and the nature and quality of the soil. It was customary to prescribe the mode of labouring the farm; which, until of late years was highly expedient, as agricultural information was not generally diffused among the farmers, by reading publications connected with the improvement and management of land; and therefore the knowledge of new and important discoveries was confined to a few intelligent and enlightened men. But, by prescribing certain rules for conducting the operations of the tenant, a system of management, comprehending all that was then known, was thus established and enforced. The progress of agricultural knowledge, however, has rendered restrictions less necessary; and it is now only deemed requisite to prevent such a rotation of crops as may injure the land, or, to specify the quantity of fallow, of green, and of white crops. The conditions of the lease, as to cropping, are now generally enforced by exacting a higher rent for such part of the farm as may be differently managed.

[‡] Erskine, b. ii. tit. 6. sect. 28. [§] Ibid.

[*] Erskine on Leases, b. ii. tit. 68. sect. 18.

A lease may be granted to any person who is capable of adhibiting his consent, or who understands any thing of the nature of a contract. But an exception was made to butchers holding a farm, parks, or enclosures, by statute of Queen Anne, parl. 1. c. 7. anno 1703, which enacted, "that no butcher be a grazier, "or hold or possess any more than an acre." This law was probably intended as a check to monopolies; but it does not seem to have been at any time much regarded; and now it is totally in disuse.

The nature of the right conferred by the lease, depends upon the manner in which the tenant is described, and the terms agreed upon between the parties. But when it is given simply to a tenant by name, if he should die before its expiry, it will go to his heirs, although they be not mentioned; and if granted to two persons jointly, the interest of the one who may happen to die, will fall to *his* heirs, and not to the surviving partner. When the lease, however, is given to two persons, and to the longest liver, and to their heirs; on the death of any one of the original tenants, it will wholly belong to the surviving tenant; the heir of the deceased having no right to the succession. Where a lease is granted to a company, the effect on it by a dissolution of the copartnery has not yet been fully ascertained. It is therefore expedient, in this case, that the intention of parties, upon such an occurrence, should be particularly expressed in the lease;

---

† Bell's Law Dictionary, article *Lease*.

and that the company should subscribe and bind themselves, not by the firm, but in their own names, and in the names of the copartnery. In all cases, where a lease is granted to a tenant and to his heirs, it is *the heir at law* that is understood by the law and practice of the country. It is therefore requisite to name a successor in the place of the heir at law, if it be not thought proper to grant a power of assigning or subsetting. This precaution is the more necessary, as the heir may be incapable of managing; but, in fact, there may be many reasons to induce landlord and tenant, in such circumstances, to avoid the interpretation of the law, and accordingly their intentions should be guarded by express conditions.

A lease merely verbal is not binding upon either party. It is required, to give a lease efficacy, that it should be extended on paper in the form of a written deed. When verbal, although possession has followed, it is only obligatory for the current year, notwithstanding a longer period or tract of years may have been stipulated. In a case where money has been expended on the subject, on the faith of the validity of the lease, a claim of damages will be sustained; but still it is terminable at the expiry of the current year, if either the landlord or tenant shall think proper to resile. But a written obligation to grant a lease, if followed by possession, is equivalent to an actual lease; and on this principle, a missive letter, or writing of any kind, however informal, will be deemed valid, not only against the grantor and his heirs, but against a singular successor, though founding on his charter and sasine.

The transmission of the lease is accomplished by assignation; or the right of using the farm may be conveyed by a subset from a principal to his subtenants. But in leases of only 19 years endurance, the right of assigning or subsetting is not implied; and therefore, to authorise the disposal of the subject, it must be expressed in writing. * When the lease, however, is given for two nineteen years, or for a longer period, or granted in liferent, the right of assigning or subsetting is then implied, if the contrary be not stipulated. The principal who grants a sublease, is bound to the landlord for his subtenant; but it is doubtful, if the same holds in the case of assignation. † Possession completes both the sublease and assignation; and where a sublease has taken place previously to the assignation, drawing the rents by the assignee will be deemed equivalent to natural possession; or, it will have the same effect, to intimate the assignation to the subtenant or occupier of the subject. If there be no express prohibition, or no declaration in the lease excluding adjudgers, a creditor may attach a tenant's right, and carry it off by legal assignation, or, in other words, by an adjudication.

---

* Bell on Leases, p. 136. † Erskine, B. ii. tit. 6. sect. 21.

A lease may be continued from year to year by tacit relocation, after the term of its endurance has expired; and to dissolve the implied agreement, a warning is requisite. ‡ The process of warning was formerly regulated by the statute of Q. Mary, 1555, c. 39.; but the act of sederunt, of date December 1756, introduced a simpler practice; and, instead of the old intricate form of procedure, it will be effectual, if the tenant be called in an action of removing forty days before Whitsunday of the year in which the lease is terminable. A regular lease, however, generally contains an obligation on the tenant to remove at the expiry of his term; and a warrant for letters of horning is given, which may be raised and executed in forty days before Whitsunday; and, on a charge, the landlord is entitled to a warrant of ejection.

By the constitution of the lease, it is necessary that it should have an "ish," expiry, or period of duration, to render it effectual against singular successors. ‖ A tack *in perpetuum* has been found null, even at the instance of the grantor's representative. It is understood, however, that a lease, although of uncommon duration, such as for one or two hundred years, is valid against the grantor's heirs or gratuitous assignees. The practice of the Court has not been uniform in this point; but it has been the general opinion of the Judges, that a lease of unusual endurance is not effectual against purchasers, although sustained against the heirs of the grantor. A rent or tack-duty is an indispensable requisite in a lease, to render it valid against singular successors; but even when affecting heirs, it is a rule in law, that in order to make it good, a lease must have a stipulated yearly rent. The act in favour of tenants implies, indeed, that a rent shall be paid for the farm, as it declares, that "the tenant shall remain till "the issue of his term, *for such like mail* as he took them for." Although the tack-duty must be inserted in the lease, to make it effectual against a purchaser, it does not follow, that it should be the full value of the subject; for any rent, however inadequate, is deemed to be a sufficient compliance with the statute.

The *delectus personæ* was a privilege constituted in favour of proprietors, which fettered the transmission of the lease.* It had no doubt originated from the prevalence of the military system, at a time when the tenant's personal service in warfare was important to the proprietor. At such a period, the selection of able-bodied men to occupy the land was an object of high consideration to a feudal baron, as his safety, and that of the tenants themselves, might depend upon the number and physical strength of those whom he might bring into the field. But in a more enlightened age, the *jus delectus* was found to be of little consequence to the land-owners; and accordingly it is not authorised in cases where the tenant has a right to subset or assign, or where the law and practice imply such a privilege. In leases of nineteen years endurance, the *jus delectus* is acknowledged; but proprietors commonly guard their right by express conditions.

---

‡ Law Dictionary, Artic le *Lease*. ‖ Erskine, B. ii. tit. 6. sect. 10.

* Erskine, B. ii. tit. 6. sect. 13.

The expediency of obliging a tenant to remain fixed on the subject of his lease, during its currency, has been much questioned; and, as in every general case, exceptions have occurred, where the obligation has been injurious to the tenant without benefiting the proprietor. Every principle of justice and expediency requires, that the obligation should form the exception, and that the general rule be reversed.

CHAP. IV. APP. No. 4.

ON TITHES AND POOR RATES, IN SO FAR AS THEY ARE APPLICABLE TO SCOTLAND.

By the Rev. Dr GEORGE SKENE KEITH.

1. *Tithes.*

Tithes are not paid in Scotland, as in England, by the farmer;[*] but a certain stipend, in lieu of tithes, is paid by the landholder to the established clergymen. Sometimes, however, where the stipend is paid in grain, the farmer is bound to furnish it in kind, if the clergyman does not chuse to accept of its value in money.

Before the Reformation, there were in every parish two different kinds of tithes, paid by the farmers and other occupiers of land. The first was called the *great teinds*, and consisted of the tenth part of the produce of the soil, that was *sock and scythe*, (*i. e.* land that was either ploughed or cut down by the scythe); and no man could harvest his corn, till he gave intimation to the rector, or tithe-holder, three several sabbath days, at the parish church; which at all times was troublesome, and, in an unfavourable season, was a most oppressive regulation. The second was called the *small*, or the *vicarage teind*, and consisted of the *tenth lamb*, tenth fleece of the sheep, and certain payments in money for cows and calves, because ten of these were seldom found in one place. The bishop, dean, abbot, rector, or other dignified clergyman, who seldom resided or discharged the parochial duties, drew the great teinds; the vicar, who almost always resided, drew the small teinds.

This was the state of teinds in Scotland till the Reformation, when most of them, from the confusion of the times, were seized upon, or granted by the Crown to certain lay-proprietors, who were afterwards called *titulars*. By these titulars, the teinds were farmed or set to others; but being exacted with much severity, a new system was established by the decreet-arbitral of Char. I., to whom the matter had been referred by the titulars and others concerned; which system was afterwards confirmed by an act of the Scots Parliament, passed in 1633. By this act, instead of two species of teind, one fifth of the land-rent is declared to be the whole teind, or fund, out of which such a provision has been made for the officiating clergymen, as was anciently judged proper by the Scots Parliament, or their commission; or, as now thought to be necessary for their decent maintenance, by the Lords of Session. who are perpetual Commissioners of Teinds.

---

[*] In Chap. IV. sect. 3. § 4. par. 2. (note), there is an account given, of the only remaining instance, of the payment of tithes in kind in Scotland.

Any landed proprietor may also value his teinds; and this value, the fifth part of the rental at the time of valuation, can never be increased. If he is not proprietor of the tithes of his estate, he can force any tithe-holder, except the King and Universities, to sell his *free teinds* at *nine* years purchase.* The minister of the parish can draw only the sums of money, and quantities of corn or meal, awarded by the court: and, at the distance of 20 years after his own or predecessor's augmentation, if that was obtained since 1807, he can prosecute for a new augmentation; (which the Supreme Court may either refuse or grant); but he never can draw more than the valued teind. Hence the tithe laws of Scotland, instead of being hurtful to agriculture, operate as a stimulus to induce the farmer to cultivate the soil. The Scottish landholder finds his interest in encouraging his tenants to improve their farms, by reclaiming barren lands, and by draining, enclosing, and manuring, at a great expense, those which were imperfectly cultivated; because, if his lands are once valued, he is not liable to any increase of his teinds, though his estate were raised to a hundred times its former rent. The Scottish farmer also has a stimulus to improve his farm—when, to the security of a lease, he has exemption from all tithes, and is not afraid to sow wheat or potatoes in his cultivated fields, or to reclaim waste land; because no tithe-holder, whether a clergyman or lay-proprietor, can disturb his schemes of improvement, or claim a share of his profits. In England, a monied man may sometimes hesitate whether he shall purchase two estates of 1000*l.* a-year, or purchase only one estate, and lay out a sum equal to its improvement. The dread of the tithe-holder will generally prevail on him to purchase two estates, and allow them both to remain unimproved. But in Scotland, the tithe laws not only act as a stimulus to improvement; but also operate as a *bonus* to a monied man, to induce him to lay out a sum equal to the purchase-money of his estate in improving it to the greatest degree of which it is capable. It is chiefly owing to our tithe laws, that (with a soil and climate inferior to England, and with farmers, who, 60 or 70 years ago, were in general still more inferior in skill, in capital, and in industry) we have been stimulated to rival the agriculture of our sister country, and even to equal those who were formerly our masters and instructors in that art.

There no doubt is an intricacy in these laws, which sometimes gives rise to litigation; and there is also often found a great inequality between the proportions of land-rent, paid as stipend in small parishes, compared to large ones; or from lands whose teinds have been lately valued, and those of which the teinds were valued long ago; as also from land where the proprietor has no right to his tithes, compared to an estate of which the proprietor is either the titular or tithe-holder. But these inconveniencies affect only the proprietors of the land, not the occupiers of the soil, and occasion the lands to be sold at an inferior price, but they are not in the least injurious to agriculture; because if the tithe is once valued, it can never be augmented beyond that valuation, whether its property be vested in the proprietor of the land, or in any other landholder. It may be added, that a *tithe register* would be a great improvement upon the legal polity of Scotland, and save much trouble to the court when augmentations were granted.

---

* Free or unexhausted teinds are what remains of the tithes, after paying the minister's stipend. They are sold at nine years purchase, because subject to pay future augmentations, and therefore of precarious value. In some cases, the price is at the rate of six years' purchase.

2. *Poor's Rates.*

Though there are laws which appoint the levying of assessments for maintaining the poor in Scotland, yet these laws are very different from those of the sister kingdom; and they are resorted to in comparatively a very few cases. The landed proprietors must pay one half of the assessment, where any such is levied, according to the valued rent of their respective estates; and the other half is levied from their tenants, according to their real rents at the time. The expensive law-suits, regarding settlements, which give so much trouble in England, are very little known in Scotland. The only regulations, which occur frequently in practice, are, that a person, who has resided three years in a parish before he became a *pauper*, shall be entitled to receive such aid from the funds of that parish as shall be deemed requisite by the Session, and the heritors who impose the assessment;* and that if he has not resided there for three years, he must be supported, as far as is judged necessary, by the parish in which he has last resided for three years; and if he have not resided in any parish for so long a period, he shall be maintained by the parish in which he was born.

In fact, the poor in Scotland are chiefly ſupported by the collections made in the different pariſhes, and by occaſional collections from humane individuals, or from thoſe churches, which either are not parochial, or are not on the Eſtabliſhment. In cities, and royal burghs, a number of the poor have a title to receive ſupport from the funds of the different incorporations; and of late a number of Friendly Societies, or Box-Clubs, have been found very beneficial in all parts of the country; indeed theſe inſtitutions cannot be too much encouraged. In calamitous ſeaſons, liberal ſubſcriptions are made for the maintenance of the poor; and thoſe humane contributions, joined to the weekly collections, and other parochial funds, have, in nineteen caſes out of twenty, prevented the introduction of regular aſſeſſments. The general exemption from poor's rates, and the very favourable tithe laws of Scotland, have greatly contributed to the late rapid improvements in the cultivation of the ſoil. While England pays at leaſt four millions annually for poor's rates, the induſtry of Scotland produces to the amount of at leaſt 400,000*l.* by additional labour of the lower claſſes, which would not otherwiſe have been exerted; and while the certain reſource of being maintained by the pariſh leſſens both the induſtry and the economy of the lower ranks in the ſiſter kingdom,—that honeſt pride, or independency of ſpirit, which renders the peaſants of this country ſo averſe to receive public charity, produces the happieſt effects, both on the character of the individuals, and on the intereſt of the community at large. It excites induſtry, it cheriſhes filial piety, and it rewards paternal affection. It is accompanied by private competence; it ſupports the mind under adverſity; and it tends not a little to promote public proſperity and opulence.

---

* In the parishes where there are regular assessments, the assessment is imposed—allocated—and the money divided among the poor by the heritors. The session has no such powers.

It is not, however, to be denied, that in populous cities, and large manufacturing towns, the collections in the pariſh churches, and other parochial funds above mentioned, are inſufficient for the maintenance of the poor. For this there are two cauſes; firſt, the increaſe of poor people, who crowd to ſuch places in queſt of employment; and, next, the number of diſſenting congregations who collect only occaſionally for the benefit of the poor. The firſt of theſe cauſes would in ſome meaſure be prevented by more generally employing women and children in the lighter parts of agricultural labour, which is already the caſe in the beſt cultivated diſtricts. The ſecond would be remedied in no ſmall degree, by appointing public collections to be made in all the churches of the kingdom, whether eſtabliſhed or not eſtabliſhed. For, though univerſal toleration in matters of religion ought to be granted as the right of every man; yet an application to the charitable feelings of a human heart ought to be made in every chriſtian congregation; and a happy emulation in the exerciſes of benevolence, which would ariſe among the different chriſtian ſects, would often prevent the neceſſity of levying aſſeſſments for the poor. Theſe ſhould always be avoided as far as is poſſible; for they always increaſe after they are once introduced. As a remarkable example of this, it may be mentioned, that in the ſmall county of Renfrew, (where the population has been nearly quadrupled ſince 1755, and where four-fifths of the whole inhabitants reſide in the different manufacturing towns), the aſſeſſments for the poor in four pariſhes, from 1791 to 1794, were below 1350*l.* annually; but that, in 1810 and 1811, the aſſeſſments roſe to 4820*l.* annually, or nearly four times as much as they had been only 17 years before. A very large proportion of diſſenters, and a number of churches, at which there is no weekly collection for the poor, in no ſmall degree occaſioned the great increaſe of parochial aſſeſſments in theſe four pariſhes.

A more particular account of the funds appropriated for the maintenance of the poor will be found in the Appendix to the 16th chapter. It is here only neceſſary to remark, that the aſſeſſments which have hitherto been impoſed for that purpoſe, do not exceed twopence in the pound of the real rent of the land; and, if the rents of the houſes be alſo taken into the account, they are, at an average, below one penny in the pound of real rent.

If friendly ſocieties were eſtabliſhed in every populous pariſh, under the inſpection of the magiſtrates and the heritors, the burden of the poor would be but little felt. If that plan be not adopted, aſſeſſments may become neceſſary; for in bad ſeaſons, the miſery of the poor is often extreme.

CHAP. IV. APP. No. 5.

ON COVENANTS. BY SIR JOHN SINCLAIR.

With the FORM OF A LEASE recommended by him.

THE ſubject of covenants, though neceſſarily tending to minutiæ, yet is of great importance. It is evident that the covenants muſt vary in every diſtrict, and, in regard to ſome particulars, almoſt in every farm; but there are ſome general points which are applicable almoſt to every farm, and theſe it is propoſed briefly to ſtate.

1. The leaſe to go to the tenant, and after him to any member of his family that he is pleaſed to appoint; and the farm not to be divided into ſmaller portions, without the conſent of the landlord.

It is ſuppoſed, when a farm is let to one individual, that it is of a proper ſize, or ſtandard, any diminution of which might be highly inconvenient, if not ruinous, to the farm. For inſtance, if a farm is divided into ſix fields, under a rotation of ſix ſhifts, or breaks, it would be in the higheſt degree prejudicial to have one of them taken from the farm and let to another. It may be proper alſo, in the event of the death of the original tenant, that the farm ſhould go either to the widow or to the eldeſt ſon, or to any one of his children to be named by the father, to prevent that jarring of intereſts which muſt inevitably injure the cultivation of the land, and probably bring the whole family to ruin. This was ſuggeſted by an intelligent legal correſpondent, who has ſeen infinite miſchief done to a farmer's family, where this precaution was neglected. At the ſame time, ſuch a ſtipulation is not inconſiſtent with the idea, that the widow, or the ſon who is preferred, may be obliged, by the father's will, to account to his family, for the profits of the capital expended for their joint behoof; and inſtances can be adduced, where the net proceeds are thus divided, in certain proportions, among the members of a farmer's family, and where the farm is as well managed as any in the neighbourhood.

2. If the tenant or his heirs wiſh to give up the farm, or are compelled by bankruptcy to renounce the poſſeſſion of it, in that caſe, one of two plans may be adopted: 1. Either the landlord ſhall have the preference, at a ſurplus rent or price, to be determined by arbiters mutually choſen, or appointed by the ſheriff of the county; or, 2. It may be agreed upon between the parties, that the leaſe ſhall be aſſignable, or the farm ſublet, for a certain ſurplus rent, and not for any premium; 5 *per cent.* of which ſurplus rent ſhall be payable to the landlord, as an inducement to him to grant that privilege; it being underſtood, that the original rent was rather lower than might have been obtained, had the farm been put up to auction.

Such a power of subletting, it is thought, would tend to throw much additional capital into the agricultural profession, as active men, possessed of funds for the purpose, would more readily embark in a business in which they could make progressive advances in wealth, as a merchant; instead of being confined to mediocrity, as every farmer must comparatively be, who is tied down, for nineteen or twenty-one years of his life, to the improvement of any particular farm whatever. A surplus rent is preferable to a premium, because the latter would exhaust the capital of the incoming tenant. Besides, if the heirs or creditors of the former tenant have a certain surplus rent once ascertained, there is no difficulty in getting it disposed of at its value in the market; and the price may perhaps exceed what the incoming tenant would have offered.

3. All mines, minerals, metals, coal, peat, marl, limestone, and quarries of all kinds, to be reserved to the landlord, with power to him, or those authorised by him, to search for, work, and take out, all, or any of these, in any part of the lands, and to carry them off at any time; and also to make roads, aqueducts, and levels, and to erect houses and machinery, when and where he may judge requisite for such purposes; the tenant being always allowed deduction from his rent, or to be otherwise paid, for any actual damage* done to his grounds, and loss occasioned to him by any of these operations, as the same shall be ascertained by two neutral persons of skill, to be mutually chosen.

4. Full power reserved to the landlord, to make or alter roads through the lands, for the accommodation of his estate; to form or repair boundary fences; to make embankments against injury from the sea, from lakes or rivers; and also to straighten boundaries, and to exchange lands for that purpose, either with any of the neighbouring proprietors, or with any of his other tenants, not exceeding one-twentieth part of the farm let, or any portion of it specified in the lease. The actual value of the ground taken away, or thrown into the farm, by these means, after being ascertained by two indifferent men to be mutually chosen, shall be deducted from, or added to the rent. Where there is any reason to imagine, that the new roads, or the exchanges made, are done invidiously, the arbiters, in such cases, to be authorised to give a permanent deduction of double the rent.

5. The landlord reserving a right to cut and carry away growing timber; and also, at any time during the currency of the lease, to assume possession of any part or parts of the lands

---

* I think, in fairness to the tenant, if he gives the full value for the *land*, that it should be *actual*, and not *surface damage* alone. If the tenant does not get actual damages, he does not get *fair* damages, that is, compensation for damages or loss sustained. Powers should be reserved to the tenant to quarry for stones, when they are to be employed upon the farm in building, draining, &c.; to dig peats for fuel; to quarry lime; or to dig marl for manure, for the use of the farm, but not for sale.'

which he shall choose, for being planted with trees, or for building houses, or for other purposes, provided the ground so taken shall not exceed a number of acres to be specified in the lease; the situation and boundaries thereof to be described, in the most distinct and unequivocal terms, in the deed, that any material injury to the farmer, in carrying on his operations, may be prevented. For the land so resumed, the tenant shall be entitled to a deduction from his rent, according as the same shall be settled by indifferent men, to be mutually chosen; the proprietor being bound to enclose, at his own sole expense, the land so planted, and to keep such additional fences in repair.[*]

6. The landlord reserving all fish and game on the farm, with the sole right of fishing, fowling, and shooting, by himself, his gamekeepers, or others having his authority in writing; but always so as not to injure the land, fences, or any sown or planted crop, and being liable to make a recompense for the same, at the arbitration of two neutral men mutually chosen. On the banks of rivers, the preservation of salmon and salmon fry ought to be peculiarly attended to.

7. The landlord reserving power, if at any time the houses, fences, gates, and drains on the farm, shall be found *in great disrepair*, to cause the same to be put in proper order, and to charge the tenant with the expenses thereof; unless he (the tenant) shall execute such repair within six months after being required so to do, by a notice in writing;[‡] or denies the necessity of such repairs: in which case the necessity thereof must be settled by arbitration.[§]

8. The farm to be cultivated, manured, and cropped in a fair and regular manner. One-fourth in turnip soils, and one-sixth

---

[*] It seems unjust to throw any share of the expense of making or repairing such fences on the tenant, as the whole benefit of the plantations goes to the landlord, unless where the plantations, and the fences connected with them, enclose and divide the farm in a proper manner; and, consequently, on that account, and from the shelter they yield, are advantageous to the tenant himself.

[‡] It is impoſſible to limit the time for executing repairs to a ſhort period, for inſtance, one month. The mechanics or labourers in the vicinity might be previouſly engaged. A fall of ſnow or intenſe froſt may render it morally impoſſible even to *commence* the repair of either fences or drains, with a fair proſpect of executing them economically, or even in a buſineſs-like or ſubſtantial manner, within that ſpace of time. Harveſt and ſeed-time ſhould alſo be excepted. It is contended, indeed, that the clauſe ſhould be cautiouſly worded, ſo as to prevent its being turned to the worſt purpoſes, thoſe of oppreſſion. Arbiters, if neceſſary, ſhould determine whether ſuch repairs be wanted, elſe a tenant may be injured by the mere ignorance of a landlord, with fair intentions. But if the landlord ſhould be *in malo animo*, what elſe but eternal vexation, and enormous expenſe, is to be expected, without benefit to either party?

[§] Some recommend, that in addition to this general power, there ſhould be fixed periods when the proprietor, either by himſelf or others, ſhould aſcertain the ſtate and progreſs of improvements, with reſpect to encloſing, &c. By this means he will ſee whether the conditions of the leaſe are fairly fulfilled, and will in clay lands, to be in grass, and the same proportions of the farm to be left in grass, properly sown down with clover and grass seeds, and that in regular fields or divisions, each consisting of at least   acres. During the three last years of the lease, one fourth part of the land in tillage to be under a fallow or a green crop, sown in drills, and properly manured with lime or dung; and no two crops of white grain to succeed each other, without a fallow or green crop intervening, unless justified by peculiar circumstances, or some unforeseen necessity; in which case it may be permitted, for one year, if the required proportion of land, in grass, and green crop and fallow, is produced in another part of the farm.

9. All the straw growing yearly on the farm, to be consumed on it, and the dung made therefrom to be regularly laid on the lands; but in case a certain quantity of dung has been brought in the course of any one year to the farm, from any neighbouring town or village, a certain quantity of straw may be sold from it, either the succeeding year, or the one after. [*]

10. The straw of the last crop to belong to the incoming tenant, in lieu of the expense of cutting down the crop, and the dung of the last crop to be left on the farm, and sold to the incoming tenant, at the average price of the district, provided the outgoing tenant paid for the dung at his entry.

11. The tenant to make good any damage that may be occasioned by fire; and, for the greater security of the landlord, the tenant to keep his houses and offices constantly insured, in some respectable insurance office, to the extent of at least   ; such insurance to be at his sole expense, the evidence thereof to be produced when required; and in case of neglecting such insurance, for the space of six months, after due notice in writing, a penalty of 50*l.* to be exigible.

12. The rent agreed upon, to be payable by equal portions, half yearly, at the usual terms in the months of May and November.

---

have it in his power to ſtimulate the exertions of an indolent tenant, and regulate and correct the injudicious operations of an unſkilful one. But this can only be neceſſary where the tenant is of a doubtful character. Some are of opinion, that the beſt plan of effecting this object, is to oblige the farmer to ſtate yearly in writing, if called for, the mode in which every ſeparate field has been cropped the preceding year.

[*] Many intelligent persons are of opinion, that the sale of hay *ought never to be allowed, more than that of straw*, unless the tenant instruct that he brings back to the farm as much, or more dung, than the hay or straw could have made. Nor ought the sale of turnips to be permitted, or even of potatoes, except under similar conditions. It may be said the tenant would ultimately hurt himself, by depriving himself of the source of manure. No doubt he would, and many do; but this is no consolation to the landlord for the deterioration of his property. An estate may be much impoverished, by selling off the hay, turnips, and potatoes, at, or towards the conclusion of a lease.

These terms are fixed upon for the better security of the landlord, and to prevent embezzlement of the crop; but three months additional time is in general allowed to the tenant, to dispose of the produce of his farm.*

13. All personal services to be abolished.

14. All disputes between the landlord and the tenant to be settled by the arbitration of one or two men mutually chosen, and, in case of variance, the arbiter or arbiters, if they judge it necessary, shall submit the case to the judgment of some eminent counsel, at the mutual expense of both parties, whose opinion shall be final.

In order that these covenants may be carried into effect, and that no legal difficulties may prevent the fulfilment of the terms agreed upon, the subjoined form of a lease is suggested by a person of great experience in that department of the law.

FORM OF A LEASE.

IT muſt be obvious that the form of a deed, where there is no real tranſaction, is, like ſuppoſed caſes in law, liable to the riſk of being defective or overcharged. Where there is a real tranſaction, the landlord on the one hand, and the tenant on the other, have each their ſeparate views and ſeparate intereſts; and in this manner, the agreement is preſerved from being overcharged on either ſide. Leaſes alſo, muſt ever be ſubject to a variety of modifications, which only thoſe on the ſpot, and intereſted in the tranſaction, can properly regulate or expreſs. It was thought deſireable, however, to ſketch out the form of a leaſe, containing the conditions above enumerated, by which the parties might be enabled, under the direction of profeſſional men, to ſelect ſuch clauſes as might appear to them uſeful or proper, and to reject ſuch as were not calculated for the circumſtances of the caſe.

LEASE OF A FARM, *adapted to the conditions above expressed.*

AGREEMENT between A B, proprietor of the ſubjects hereby ſet, ON THE ONE PART, and C D, ON THE OTHER PART, in manner following: THAT IS TO SAY, The ſaid A B hereby LETS to the ſaid C D, and his heirs, or to any member of his family that he is pleaſed to appoint, or aſſignees, under the ſtipulation after mentioned *—(*see Note, p.* 334, *where that plan is approved of*)—all and whole the lands of &c. &c. lying within the pariſh of , and county of and that for the full and complete ſpace of nineteen years and crops from and after the entry of the ſaid C D thereto, which is hereby declared to be, as to the arable lands, meadows, and paſtures, at the ſeparation of this preſent crop from the ground, and as to the houſes, at the term of Whitſunday, both in the year ; under the following reſervations to the ſaid A B, his heirs or aſſignees.

---

* Where the clergyman of a parish receives grain in kind, the tenants on an estate ought to furnish the quantity to be paid, in proportion to their respective possessions, to be allowed for it as part of their rent.

1. Full power to ſearch for and work coal, and other minerals or metals, to quarry lime and free-ſtone, and to dig marl or peats, in any part of the lands hereby ſet, and to apply the ſame to his or their uſe; with power alſo of making roads, aqueducts and levels, or of building houſes, or erecting machinery neceſſary for ſuch operations; the ſaid A B and his foreſaids being always bound and obliged to pay to the ſaid C D and his foreſaids, the real actual damage that may be done to the grounds by the exerciſe of the above powers, as the ſame ſhall be determined by arbitration, in the manner after mentioned.

2. Full power to the ſaid A B, and his foreſaids, to ſtraighten and alter the marches of the ſaid lands with thoſe of the adjoining lands; and if it ſhall happen, in conſequence of ſuch alteration of the march of the ſaid farm, that any ground ſhall be added thereto, or taken therefrom, then the rent of ſuch ground ſhall be aſcertained by two perſons to be choſen in manner foreſaid, and the ſame ſhall form either an addition or deduction from the above rent, as the caſe may happen.

3. Full power to the ſaid A B, and his foreſaids, at any time during the currency of this leaſe, to cut and carry away growing timber, and alſo to aſſume the poſſeſſion of ſuch part or parts of the lands hereby ſet, as he ſhall think beſt, whatever the form or ſituation of them may be, for the purpoſe of planting the ſame with trees, providing that the part or parts ſo taken ſhall not in whole

---

* As by this destination, unless where the tenant has a power of assigning, the tenant cannot name an heir, and therefore the farm may fall into the hands of heirs portioners, contrary to the interests of all parties, or into the hand of an elder son not educated as a farmer, it ought to be well considered, whether this clause ought not to be differently expressed; as, for instance, 'To the said 'C D and his heirs, legal or voluntary, he being hereby entitled to assign this 'lease for this purpose, and to this extent alone: But declaring, that it shall 'not go to heirs portioners, nor be in any shape parcelled out; and failing of 'the destination of the tenant, the lease shall go to the eldest heir female in 'succession, whole and entire, but under the burden of a proportional allow- 'ance to the other sisters, as fixed by her father, or at the sight of the Judge 'Ordinary, the said eldest heir female, by accepting of the preference hereby 'given to her, being bound to make the allowance, as the same shall be ascer- 'tained by the father's settlement, or by the said Judge Ordinary, either by a 'slump sum, or by annual payments, as shall be most consistent with the situa- 'tion of the parties.'

exceed the number of Scots acres, and that twelve months previous notice ſhall be given to the tenant, of the ſaid A B's intention to aſſume the ſame; and the ſaid C D being entitled to a deduction from the rent of ſaid farm, as the ſame ſhall be aſcertained by arbiters in the manner herein after mentioned; and the ſaid A B being bound to fence and encloſe ſuch planting in a ſufficient manner at his own expenſe.

4. Full power to the ſaid A B and his foreſaids, to make or alter roads through the lands for the accommodation of his eſtate, to make embankments againſt injury from the ſea (*or from rivers*); to drain lochs or marſhes on his eſtate, by driving drains through the lands hereby ſet, or by other operations fitted to attain that object, in the manner and direction which *bona fide* may be found beſt to anſwer the purpoſe; the ſaid A B and his foreſaids being always bound to make up to the ſaid tenant any ſurface damage that may ariſe from the operations in roads, embankments, drains, or otherways; and that, in caſe of difference, at the ſight of arbiters mutually choſen in manner foreſaid, and with the powers hereby given to arbiters and overſmen: But if ſuch operations ſhall appear to the ſaid arbiters or overſmen to have been done unneceſſarily or invidiouſly, they or he ſhall be empowered, as they are hereby ſpecially empowered, to award to the tenant double the amount of the actual damages, for ſuch unneceſſary or invidious operations.

And, 5. Full power to the ſaid A B and his foreſaids, or to thoſe deputed by them, or having his or their authority in writing, the right of fiſhing, fowling, ſhooting, courſing, and hunting on the lands and others hereby ſet, with every other uſe and power of recreation competent to a landlord by the law of Scotland; but always at the proper ſeaſons of the year for ſuch ſports, and ſo as not to injure the land, fences, or any ſown or planted crop: And where any injury has been ſuſtained by the ſaid tenant from any of theſe cauſes, he ſhall receive a full recompense for ſuch damage, as the ſame (in caſe of any difference) ſhall be aſcertained by two arbiters, choſen in the manner and with the powers foreſaid.

Which tack above written the ſaid A B binds and obliges him, his heirs and ſucceſſors, under the reſervations foreſaid, to warrant to the said C D and his foreſaids, at all hands, and againſt all deadly, as law will.

For which causes, and on the other part, the ſaid C D binds and obliges himſelf, his heirs, executors, and ſucceſſors whomſoever, to the obligations hereinafter contained.

1. To pay to the ſaid A B, his heirs and aſſignees, the ſum of Sterling of yearly rent for the ſubjects hereby let, at Whitſunday and Martinmas, by equal portions, beginning the firſt term's payment of the ſaid rent at Candlemas 1815, and the next term's payment at Lammas thereafter, for crop and year 1814; and ſo forth, yearly and termly, during the currency of this leaſe, with a fifth part more of each term's rent of liquidated expenſes in

caſe of failure, and the legal intereſt of each term's rent from and after the reſpective terms of payment during the not-payment of the ſame.

2. To deliver yearly to the miniſter of the pariſh of , the proportion of victual-ſtipend payable to him from the ſubjects hereby let, the ſaid A B and his foreſaids being obliged to give a diſcount to the ſaid tenant and his foreſaids out of the rent above specified, for the quantity of victual ſo delivered, according to the fiars of the county.

3. To pay the proportion of ſchoolmaſter's ſalary, and ground-officer's dues payable from the lands hereby ſet.

4. To conſume, by his cattle, the whole hay and ſtraw that ſhall be raiſed on the ſaid farm; and that he ſhall not ſell nor otherwiſe diſpoſe of any part thereof, unleſs in ſo far as he may have purchaſed dung for the uſe of the farm; in which caſe, a quantity of hay or ſtraw equivalent thereto may be diſpoſed of.

5. To apply to the lands hereby ſet the whole dung made thereon; and properly to labour, manure, and crop the ſame in a fair and regular manner; and to uſe all proper means for meliorating and improving the ſame; and more eſpecially to improve the roads on the ſaid farm; and, for that purpoſe, to repair number of yards every year, if neceſſary.

6. To have one-fourth part of the farm, or more, in graſs † (*where it is of a turnip soil, and where the soil is clay, one-sixth part only in grass*); and the ſame proportion of the farm ſhall be left in graſs, properly ſown down with clover and graſs ſeeds, at the expiry of the ſaid leaſe.

7. To have, during the three laſt years of the leaſe, one-fourth part of the land in tillage, under fallow, or laid down with a green crop, properly manured with lime or dung, and ſown in drills; and not to take two white crops running, without the intervention of a green crop, unleſs juſtified by circumſtances of unforeſeen neceſſity, and that only for one year, and under the expreſs condition that the required proportion of graſs and green crop and fallow ſhall be produced in another part of the farm: And in regard the rent before mentioned is stipulated in consideration of this method of culture being invariably adhered to, therefore, in case the said C D or his foresaids shall crop the lands, or any part thereof, in a manner different from what is hereby prescribed, the said C D binds and obliges himself and his foresaids to pay to the said A B or his foresaids, at the term of Whitsunday after every such crop, the

---

† In some leases a plan of management is inserted; but many consider it more advisable, where the tenant is a person of skill, character, and capital, to leave this to his judgment, and to bind him down to those regulations only which may secure the landlord against any danger from the land being exhausted, at the termination of the lease; which is effectually prevented, by enforcing an alternate white and green crop. Many are of opinion, that the proportion of the farm in grass should be a third.

sum of of additional rent for each acre that shall have been so miscropped, and which additional rent shall be subject to no modification; and yet the tenant shall not, on the offer of payment of such additional rent, have a right to miscrop or mislabour the said farm contrary to the rules above laid down.

8. To allow the incoming tenant to sow grass-seeds in that part of the farm on which grass seeds ought to be sown, and that without any payment or deduction of rent.

9. To uphold and keep in repair the houses and offices on the farm, during the currency of this lease, which are now declared by both parties to be in sufficient order, and are ascertained to be worth L. sterling; and at the expiry thereof, the said whole houses shall be again valued and apprised by two persons, one to be chosen by each party; and in case the valuation at the expiry of this lease shall fall short of the foresaid valuation, the said C D binds and obliges himself and his foresaids, to pay the amount of the deficiency to the said A B or his foresaids; but in case the valuation at the expiry of the lease shall exceed the said sum of Sterling, the said C D and his foresaids shall have a claim for the value of such meliorations, not exceeding the sum of Sterling, with a reasonable deduction to the landlord, if money has been depreciated, since the value of the buildings were originally estimated.

10. To make good any loss that may happen to the houses or offices of the farm by fire; and, for the said A B's further security, to insure the same against any loss by fire, to the extent of upon their own expense; and shall produce the evidence of such insurance having been made, when required, under the penalty of fifty pounds for neglecting the same.

11. To preserve the inclosures and fences of the said lands in a proper manner, during the currency of this lease, by regularly repairing any breaches that may happen in the same; and also from time to time, as occasion may require, to cut and make proper ditches and drains through the subjects hereby let: DECLARING, that in case the said C D, or his foresaids, shall neglect regularly to repair the breaches that may happen in the fences, or to cut and make proper drains, within one month after he or they shall be required so to do by the said A B, or his foresaids, then, and in that case, the said A B, or his foresaids, shall be at liberty to employ proper persons to execute the same; and the said C D binds and obliges him, and his foresaids, to pay to the said A B, or his foresaids, the amount of the expense so incurred, on production of the workmens' accounts and receipts, without further proof: AND FURTHER DECLARING, that the said inclosures and fences, the value of which at the date thereof was ascertained to amount to Sterling, shall be valued at the expiry of this lease, and the deterioration, if any, paid by the said C D, and his foresaids, in the same way as in the case of the houses

above mentioned; or any meliorations, to an amount not exceeding . . . Sterling.

12. To protect all trees planted, and to be planted on the said farm, in virtue of the said reserved powers, during the currency of this lease.

13. To give over to the incoming tenant the whole dung that may be remaining unused, (together with the crop of turnips that shall be on the farm at the expiry of the lease, if the entry is at Martinmas), the value of which shall be ascertained by two persons, one to be chosen by each party.* And,

14. To remove him or themselves, their servants and stocking, from the possession of the subjects hereby let, at the expiration of this lease, and that without any previous warning, or process of removing instituted for that purpose.—(*Here will follow any additional obligation on the tenant that particular circumstances may render necessary.*)

AND BOTH PARTIES BIND AND OBLIGE themselves and their foresaids, in case any dispute shall arise betwixt them respecting the true meaning or intent of all or any of the clauses and obligations herein contained, to REFER the same to the determination of two persons, one to be chosen by each party, with power to the said arbiters to chuse an oversman, in case of variance in opinion, or to refer the case to some eminent counsel, at the mutual expense of both parties, whose judgment shall be final. And in case either party shall fail or delay to name an arbiter for settling such disputes, for the space of one month after a formal submission shall have been presented to him, and he shall have been required to make such nomination, by a writing under the hand of the other party, or under form of protest; then and in that case the said parties do hereby name and appoint E, F, G, H, in their order, that is to say, the said E as sole arbiter, and failing him the said F, as sole arbiter, and so on through the rest; with power to the said persons, as sole arbiters, in their order foresaid, to proceed and determine all questions whatever that may arise out of the principal contract; and whatever the said sole arbiter may determine, either by final or interim decree arbitral, on the presentation of either parties, they bind themselves and their foresaids reciprocally to each other, to implement under such penalty as the said sole arbiter for the time shall annex to the decree arbitral to be pronounced by him.

And it is further stipulated betwixt the said parties, that if the said tenant shall be desirous to dispose of his interest in this lease, or if he shall become bankrupt, that then, and in either of these cases,* the landlord shall be entitled to purchase the same, at a price to be fixed by two persons mutually chosen; or, in case of their differing in opinion, by an oversman to be chosen by them; or in case the said parties cannot agree about the persons to be named as arbiters, then the same shall be named by the Sheriff-depute of the county.

---

* It is sometimes agreed, that the outgoing tenant shall be entitled to the stable-yard manure made during the winter preceding the last crop he grows, for which the incoming tenant shall be bound to pay a fair value.

Again, the straw of the last crop is sometimes given to the incoming tenant, in return for the expense and trouble of cutting down the crop.

AND LASTLY, Both parties BIND and OBLIGE themselves and their foresaids to implement their respective parts of the premisses to each other, under the penalty of   Sterling, to be paid by the party failing to the party performing, or willing to perform, over and above performance. AND they CONSENT to the REGISTRATION hereof, and of the decrees arbitral to be pronounced by the said sole arbiters, in the books of Council and Session, or other judges' books competent, that letters of horning, on six days charge, and all other execution necessary, may pass on a decree to be interponed thereto in form as effeirs; and thereto they CONSTITUTE   their procurators, &c. IN WITNESS WHEREOF, &c.

---

* Or in place of this clause, it may be expressed in this manner: "The said tenant shall be allowed to assign his lease, or subset the said farm, at such surplus rent as can be obtained for the same; three per cent. of which surplus rent shall go to the landlord, as a premium to him for the license to assign or subset."

CHAP. IV. APP. No. 6.

ON THE EXPENSES AND PROFIT OF FARMING.

The most important documents which have been published on is subject, are, 1. A Statement of the Produce, Rent, and Ex-nse of cultivating a Farm in East Lothian, of 533 Scotch, or 2 English Acres, by George Rennie, Esq. of Phantassie; and, A paper drawn up on that subject for the Board of Agricul-re, by Mr Hope, of Fenton, in East Lothian.

I.

TATEMENT of the PRODUCE, RENT, and EXPENSE of cultivating a Farm in East Lothian, of 533 Scotch acres, or 702 English Acres, by GEORGE RENNIE, Esq. of Phantassie. From Sir JOHN SINCLAIR's Account of the Husbandry of Scotland, vol. II. p. 77.

---

1. *PRODUCE.*

Rotations.	Fallow.	Wheat.	Hay.	Oats.	Beans.	Pasture.	Price.			
On a Clay Soil.		bolls	stones	bolls	bolls	-	*s.*	*L.*	*s.*	*d.*
2 acres fallow,	42	—	—	—	—	-	—	—		
2 —— wheat,	at 10 bolls per ac.	420	—	—	—	-	40	840	0	0
2 —— hay,	200 stones ——	—	8400	—	—	-	1	420	0	0
2 —— oats,	10 bolls ——	—	—	420	—	-	25	525	0	0
2 —— beans,	8 —— ——	—	—	—	336	-	24	403	4	0
2 —— wheat,	8 —— ——	336	—	—	—	-	40	672	0	0
2 acres.		756	8400	420	336	-	—	£2860	4	0
On a Light Soil.			barley							
62 acr. turnips,	—		—	—	—	-	10*l.*	620	0	0
31 — barley,	10 bolls per acre	—	310	—	—	-	30*s.*	465	0	0
31 — wheat,	8 —— ——	248	—	—	—	-	40*s*	496	0	0
62 — grass pastur.	—	—	—	—	—	62	140*s.*	434	0	0
62 — oats,	10 bolls per acre	—	—	620	—	-	25*s.*	775	0	0
53 — pasture, old.	—	—	—	—	—	59	90*s.*	238	10	0
301 turnip land & grass.		1004	310	1040	336	-	—	£5888	14	0
252 clay land.										
553 acres.	Average produce, per Scotch acre, in six years, 11*l.* 7s.; or per English acre, 9*l.* 1s. 7d.									

2. *EXPENSES.*

	Wheat.	Barley.	Hay.	Oats.	Beans.							
I.							*L.*	*s.*	*d.*	*L.*	*s.*	*d.*
1. Rent of 553 acres Scotch, at 90s.	—	—	—	—	—	—		—	—	2488	10	0
2. Wheat for 42 acres, at three firlots per acre	31½	—	—	—	—	at 40s.	63	0	0			
3. Hay for 42 acres, seeds	—	—	—	—	—		42	0	0			
4. Oats for 42 acres, at 1 boll	—	—	—	42	—	25s.	52	10	0			
5. Beans for 42 acres, at 1 boll, 3 pecks	—	—	—	—	50	24s.	60	0	0			
6. Wheat for 42 acres, at 1 boll	42	—	—	—	—	40s.	84	0	0			
										301	10	0
II.												
1. Turnips for seed, at 2 lib. per acre	—	—	—	—	—		6	6	0			
2. Barley for seed, 2 firlots, 1 peck	—	—	—	—	—	30s.	27	0	0			
3. Wheat for seed, 1 boll	31	—	—	—	—	40s.	62	0	0			
4. Hay for seed -	—	—	—	—	—		62	0	0			
5. Oats for seed, 3 firlots, 2 pecks	—	—	—	—	—	25s.	67	10	0			
										224	16	0
Expenses - -	104½	18	—	96	—	—						
Horse corn - -	—	—	—	350	—	25s.	437	10	0			
——— hay - -	—	—	2000	—	—	10d.	83	6	8			
——— grass, 10 acres	—	—	—	—	—	160s.	80	0	0			
——— tares, 5 acres	—	—	—	—	—	160s.	40	0	0			
										640	16	8
Smith and wright-work - - -							100	0	0			
Servants, 17 men, at 36*l.* a-year - -							612	0	0			
——— 3 men and a boy - - -							80	0	0			
Turnip work, &c. - - - -							50	0	0			
Harvest work, &c. - - - -							300	0	0			
Taxes and incidents - - -							190	0	0			
										1332	0	0
										4987	12	8
Profit - -										901	1	4
Total produce										£ 5888	14	0

If the total profit is 901*l.* 1s. 4d., that is, at the rate of 1*l.* 12s. 7d. per Scotch, and 1*l.* 6s. 1d. per English acre: From that profit the family of the tenant is to be maintained; and the interest of the capital employed, which cannot be calculated at less than 6000*l.*, must be paid. The profit on the capital is only at the rate of 14 per cent.; an interest hardly equal to that to which a farmer is justly entitled, considering his toil, and the hazards to which he is liable, from the seasons, the markets, &c. On this subject, it is well observed by Mr Dudgeon of Prora, that if something decent is not made by skilful and industrious farmers, it would injure both the proprietors of land and the public. Adventurers of a different stamp would occupy the farms; and the genius and spirit of agriculture would become languid, and perhaps expire.[†]

II.

OF THE EXPENSE OF CULTIVATING ARABLE LAND IN SCOTLAND.

By Mr HOPE, of Fenton, in East Lothian.

THE cultivation of any given portion of land, is affected by so many different circumstances, that it becomes a very difficult matter to lay down any general rules, which can be made applicable to every situation;—so much depends upon the nature of the soil, whether it be sand, gravel, or clay,—its natural position, whether it be hilly or level,—also on the season, whether it be wet or dry, and other circumstances, altogether independent of the quantity of labour bestowed on the cultivation, or of the wages of labour in any particular district. The following method of calculation, however, is perhaps the nearest approximation to truth, in estimating the general expenses over a whole farm.

The capital stock necessary for a ploughgate of land, may be reckoned as follows, viz.

A pair of horses - - - - -	L. 100	0	0
Plough, brake and harrows - - -	7	10	0
Long and close cart, with wheels and axle -	18	18	0
Harness for horses - - - - -	8	10	0
Barrow, grape, spade, and shovel - - -	1	5	0
[*] One-fourth of the expense of a thrashing-machine, with fanners, barn looms, drills, scythes, and cart-ropes - - - - - -	32	0	0
10 sacks for carrying grain, at 3s. 6d. each -	1	15	0
[*] One fourth of a roller - - -	1	0	0
	L. 170	18	0

[†] See The Husbandry of Scotland, vol. 2. p. 192. 2d edit.

[*] Upon the supposition that a labourer is employed for every four ploughgates of land, as also that this is the medium size of farms where thrashing-mills and rollers are employed. Thrashing-mills have now become so expensive, that some farmers would be inclined to add £10 to this item.

The annual expenses attending a plough and a pair of horses, are as follow:

Servants' wages for a year	L. 35	0	0
30 bolls of oats for horses, at 21s. per boll	31	10	0
200 stones of hay at 9d. per stone	7	10	0
Clover and tares for summer food	12	0	0
Wright, smith, and saddler's accounts, or about 25 *per cent.*	8	10	0
Horse-tax	1	8	0
Road-work	2	0	0
Interest at 5 *per cent.* on capital stock	8	10	11
Interest at 12½ *per cent.* on horse and thrashing machine, as perishable stock	16	10	0
* One-fourth of a labourer through the year	8	0	0
A woman for hoeing, &c. in summer, and cleaning corn in winter, &c. at 10d. a day	6	0	0
	L. 136	18	11

Now, if 42 Scotch, or 52 English acres of strong land be allowed for each pair of horses, which in some situations may be found rather too much, and the mode of management adopted be according to the six-course shift, this will give 35 Scotch, or 44 English acres under crop, upon which expenses of every description must be charged, at least must be paid from the produce of these acres. Dividing, therefore, the above sum of 136*l.* 18s. 11d. by 35, the number of productive acres, the annual

expense for each acre will be	L. 3	18	2¼
To which there is to be added for seed	1	2	0
Ditto harvest work	0	15	0
Ditto tolls, custom, &c. in driving grain to market	0	1	0
	L. 5	16	2¼

Which sum is the expense unavoidably incurred, upon every Scotch acre under crop, independent of rent, or the farmer's personal expenses. This is at the rate of 4*l.* 12s. 9½d. per English acre. There are certainly various other expenses which must be paid out of the produce, such as repairs of houses and fences, making drains, purchasing lime, insurance premium, assessed taxes, &c. &c.; but as the 7 acres in grass, out of the 35 in the estimate, will not require near so much expense as the arable land, the sum above stated may be considered as a fair average.

No doubt the man and horſes will occaſionally be employed in other buſineſs beſides ploughing and harrowing, as driving fuel, &c.; but in whatever other labour they may be engaged, the whole expenſe neceſſarily falls to be charged upon the fields actually under crop. So that the advantages of keeping both men and horſes actively employed, whenever they can with propriety be in the fields, is perfectly evident; for whether the fallow in ſummer gets three ploughings, or ſix, or any other operation is accurately or ſloven'y performed, the expenſe is nearly the ſame to the farmer.

The above mode of general calculation can eaſily be applied to every ſituation, whatever may be the number of acres allowed for a plough, the rotation of crops, the ſum expended in purchaſing capital ſtock, or the annual expenſes for the maintenance of man and horſes; as, in every one of theſe particulars, ſcarcely two men will be found exactly to agree in their computation.

The following eſtimates exhibit ſomething like the average expenſe of cultivating an acre of arable land, in different diſtricts of the kingdom; and as fallows upon clay, and turnips upon dry ſoils, are conſidered the baſes for the rotations upon theſe different kinds of ſoil, the eſtimate ſhall be limited to the expenſe of the crops following theſe two modes of preparation.

The expenſe of raiſing an acre of wheat after ſummer fallow, in the Lothians and Berwickſhire, on the ſuppoſition that the manure applied is made upon the premiſes, and no lime put into the land, may be reckoned as follows, viz.

1.	Six ploughings, at 10s. 6d. each	L. 3	3	0
	Harrowing nine double times, at 2s. each	0	18	0
2.	Rolling, on the average of various ſoils, *	0	3	0
	Picking and gathering root weeds	0	2	6
3.	Twelve tons of dung, at 7s. 6d. each, †	4	10	0
	Carriage of ditto	0	12	0
	Spreading ditto, by women or girls	0	1	8
	Seed, 3 firlots, at 36s. per boll	1	7	0
		L. 10	17	2

To which ſum the rent for two years muſt be added; and when the ground is limed, which is often the caſe once in twenty-one years, from 50 to 80 bolls, at from 2s. to 2s. 6d. per boll, is applied. Taking the medium quantity and price, with the rent, at 3*l.*, the ſum frequently expended will amount to 24*l.* 6s. 5d. per Scotch, or 19*l.* 9s. 2d. per Engliſh acre, the intereſt on the firſt year's rent being included.

The expense of raising an acre of turnips in the above counties, may be estimated as follows:

Four ploughings, reckoning one furrow for making up and another for splitting down the drills, at 10s. each ploughing,	L. 2	0	0
Harrowing and rolling,	1	1	0
Carry forward,	L. 3	1	0

---

* In strong clays, where three horses are necessary, and three or four rollings are required, 5s. or even 6s. per acre must be charged.

† Good home-made dung may be worth 10s. per ton on the premises.

Brought forward,	L. 3	1	0
Gathering root weeds,	0	3	6
Twelve tons of dung, at 8s. 6d. carriage included,	5	2	0
Spreading ditto, with women and girls,	0	1	8
Seed, and sowing,	0	3	6
Thinning and hand-hoeing twice,	0	7	6
Horse-hoeing,	0	8	0
Which is at the rate of per English acre.	L. 9	7	2

The expense of raising a crop of turnips in Selkirkshire, according to Communications to the Board of Agriculture in 1804, was estimated as follows.

The first ploughing at 7s. 6d.; other three at 6s. each	L. 1	5	6
24 carts of dung, at 2s. 6d. each,	3	0	0
Four horses, each at 5s.; three men, each at 1s. 10d.; two women, each at 10d., two days work,	2	14	4
Seed 1s. 6d.; six hoers at 10d.	0	6	6
Horse-hoeing,	0	10	0
Amounting, exclusive of rent or extra manure, to per acre.	L. 7	16	4

The expense of raising an acre of turnips, in the Upper Ward of Lanarkshire, is extracted from the same authority.

Two ploughings, two ridgings equal to one ploughing, makes three, which with harrowing, at 8s. each,	L. 1	4	0
25 cubic yards of dung, at 3s. 6d.	4	7	6
Carriage, spreading, &c.	0	8	6
Sowing seed and rolling,	0	3	6
Hand-hoers,	0	4	8
Horse-hoeing,	0	5	0
	L. 6	13	2

In the Middle and Lower Wards, the cost of preparing an acre of turnips, or barley, the expense of which is considered about the same, will be fully one-fifth more.

In the dense soils of the Middle and Lower Wards, the expenses of preparing an acre of wheat by summer fallow, is nearly as follows.

Five times ploughing, with harrowings,	L. 2	15	0
40 cubic yards of dung, with carriage and spreading,	11	10	0
Seed, sowing and harrowing in,	1	3	0
	L. 15	8	0

Lime is also frequently given, six chaldrons of which, with carriage, &c. will cost - - - - L. 4 18 0

To all which the rent must be added.

In this district, the price of dung has risen from 1s. 6d. the cubic yard in 1790, to 4s. a yard in 1804; but if 40 cubic yards be absolutely necessary for raising a crop of wheat, after summer fallow, the price must of necessity be high, or the sowing of wheat very limited.

The following extract, from the Survey of Aberdeenshire, by Dr Skene Keith, contains the first expense upon entering to a farm in that county at Whitsunday 1806 upon a new lease for nineteen years, with the subsequent charges incurred till Martinmas 1807, when the tenant had harvested the first crop, eighteen months after his entry. Its extent is 190 Scotch, or 239 English acres. His rent is 170*l.* in money, 20 bolls of oat-meal (equal to 10 sacks of 280 lib. avoirdupois), and 4 bolls of bear or bigg, (about three Winchester quarters.)

At his entry, he brought with him,

Household furniture, and implements of husbandry, worth - - - - - - -	L. 234	5	0
He paid to the heirs of the former tenant—			
For melioration of his farm-house and offices, -	380	0	0
For the machinery of a thrashing-mill, - -	45	0	0
For hay and pasture grass, to prevent breaking up the land, - - - - - - -	270	0	0
For old corn and straw of crop 1805, - -	33	0	0
For the rent of two acres of bear sown after turnips,	14	0	0
For seed to ditto, - - - - - -	2	0	0
For grass-seeds sown among his corns, and putting them in, - - - - - - -	13	4	0
His expenses at entry were in all -	L. 991	9	0
His six horses were worth - - - - -	150	0	0
—— six cows and two calves, - - - -	50	0	0
—— twelve oxen, - - - - - -	180	0	0
—— twenty-two other young cattle, - -	184	0	0
He paid for road assessments and other taxes, -	4	0	0
His expenses and stocking united were	L. 1559	9	0
For the first six months after his entry,			
His servants' wages, exclusive of their board-wages,	35	0	0
His family expenses, and board-wages of servants,	78	0	0
His fuel cost, - - - - - - -	9	0	0
For corn and fodder, *i. e.* corn with the straw, -	154	0	0
For lime got in the last six months, - -	44	0	0
His expenditure at Martinmas 1806,	L. 1879	9	0

Brought over,	L. 1879	9	0
In the course of next year, before he had a crop of his own, he paid,			
For fuel, meal and malt to his family, - -	59	18	0
For wheat-seed to a small patch of land, -	1	1	0
For turnip seed in eighteen months, - -	1	4	0
For an additional horse bought, - - -	27	0	0
Wages for one year to six men and three women servants, - - - - -	94	0	0
To harvest shearers and day labourers, - -	21	0	0
Farming implements, and blacksmith's and carpenter's accounts since his entry, - - -	71	10	0
Lime in 1807, - - - -	121	0	0
Incidents and travelling expenses to his servants,	15	15	0
Total expenses and value of stock,	L. 2291	17	0

When the interest of capital and the farmer's personal expenses are added to the above, the total sum will amount to about 2500*l*., or 13*l*. 3s. 2d. per Scotch, or 10*l*. 10s. 6½d. per English acre, partly owing, however, to his having entered at May, instead of November.

It is not a common practice in Scotland, for the incoming tenant to pay the outgoing one, for meliorations upon the farm-house and offices; nor does it often happen, that so large a sum, as noticed in the above estimate, is paid to prevent the breaking up of pasture-grass. But, on the other hand, it is very common, in all the arable districts of the kingdom, for the incoming tenant to reserve a certain portion of the farm for turnips or summer fallow, for which he generally pays the outgoing tenant, according to what it might have been worth to him for his last crop, which, with what is often paid for cutting-grass for work horses, and for any dung that may be upon the premises at the term of entry, always amounts to a considerable sum; and as all the other items of expense are something similar to what every incoming tenant, in all the lowland districts of the country, generally has to pay, the above estimate presents a tolerably accurate view of the ordinary expense of stocking an arable farm.

CHAP. IV. APP. No. 7.

ON THE CAPITAL NECESSARY FOR CARRYING ON FARMING OPERATIONS.

By SIR JOHN SINCLAIR.

Among the expenses attending farming, the interest of the capital necessary to stock the farm, and other charges to which a tenant is liable at the commencement of his lease, are certainly particulars of considerable importance. It is impossible to go through this subject minutely, in so far as regards each species of farm; but from the following estimate, drawn up by an experienced and intelligent farmer, (Mr Dudgeon of Prora, in East Lothian), it will be seen, what articles are in general considered to be essential for an arable farm of considerable extent, and what capital is necessary to commence arable farming, the interest of which must be deducted from the produce of the farm, and included among the expenses of cultivation.

Estimate of the Sum required to stock a Farm of 300 Scotch, or 380 English Acres of Clay Land.

12 Plough-horses, at 50*l.* - - - -	L. 600	0	0
1 Supernumerary, - - - - -	30	0	0
1 Saddle-horse, - - - - -	50	0	0
Furniture for the whole, - - -	66	0	0
6 Ploughs, at 4*l.* - - - - - -	24	0	0
12 Harrows, at 1*l.* 7s. - - - - - -	16	4	0
2 Rollers, 1 of stone, the other of wood, covered with plate-iron, and a box to hold as much weight as make them equal, - - -	10	10	0
6 Close carts, at 15*l.* - - -	90	0	0
6 Long ditto, at 4*l.* 4s. - - - - -	25	8	0
2 Wheel-barrows, at 1*l.* 1s. - - - - -	2	2	0
2 Hand ditto, at 5s. - - - - - -	0	10	0
Forks, graips, &c. - - - - - -	3	3	0
72 Corn bags, at 4s. - - - - - -	14	8	0
2 Firlots, at 1*l.* - - - - - - -	2	0	0
Barn looms, rakes, &c. - - - - - -	3	10	0
Thrashing-machine, with appendages, - -	200	0	0
2 Set of hand fanners, at 5*l.* - - - - -	10	0	0
Smith, for supporting ploughs and carts, -	21	0	0
Wright, for ditto, - - - - - -	15	0	0
One-half statute road-money, at 40s. per plough,	6	0	0
Carry over	L. 1189	15	0

Brought over				L.1189	15	0

Six Servants for 1st Year.

72 Bolls oats, at 25s.	L.90	0	0			
18 —— barley, at 30s.	27	0	0			
12 —— peas, at 25s.	15	0	0			
½ —— wheat, at 40s. for stacker,	1	0	0			
One pair of shoes to sower,	0	10	0			
				133	10	0

Horses.

240 Bolls oats, at 24s.	L.288	0	0			
7 Acres grass, at L.8,	56	0	0			
3 —— tares, at L.7,	21	0	0			
1200 Stones of hay, at 10d.	50	0	0			
				415	0	0

Seed Corn.

	Acres.	*Bolls.*						
Fallow,	50	0	L. 0	0	0			
Wheat,	50	37½ at 40s.	75	0	0			
Clover,	50	0	50	0	0			
Oats,	50	50 at 25s.	62	10	0			
Beans,	50	62½ at 25s.	78	2	6			
Wheat,	50	50 at 40s.	100	0	0			
						365	12	6
	300							
						L.2103	17	6

Lime for one sixth part of the farm, 50 acres,	L.500	0	0			
3 Extra servants, at 12s. a-week, for 9 months,	64	16	0			
400 Cubic yards dung, at 3s. the price to the incoming tenant, (viz. half price)	60	0	0			
Filling and spreading the same, making 600 cart-loads, at 3d.	7	10	0			
Shearing and leading first crop on 200 acres, at 28s. 6d. *per* acre,	285	0	0			
25 Cattle for wintering in the straw-yard, at L.10 each,	250	0	0			
4 Milch cows, at L.16,	64	0	0			
Interest on prompt outlay at first entering on the farm, at 5 *per cent.* for 5 months, for L.900,	18	15	0			
				1250	1	0
			Total,	L.3353	18	6

Which is at the rate of L.11 : 3 : 7 *per* Scotch, or L.8 : 18 : 10½ *per* English acre.

In this calculation no allowance is made for the first year's rent, nor for furniture, nor the maintenance of the family, which would add considerably to the preceding estimate; but the amount of which must depend on a great variety of circumstances.

But though such a sum is necessary in a highly cultivated district, where the farmers are opulent, and have large capitals at command, yet in other parts of Scotland a smaller sum will suffice.

In the county of Moray, it is stated, that where the tenant has to build houses, and enclose the farm at his own expense, it would require 3000*l.* to stock 220 Scotch acres; that is, at the rate of nearly 13*l.* 13s. *per* Scotch, or 10*l.* 18s. 6d. *per* English acre: but it is observed, at the same time, that half that sum would be sufficient, if the proprietors were to build the houses, enclose the farm, and allow a sufficiency of lime. For these expenses they would be amply repaid; as tenants of small capital would then embark in farming, and more candidates would present themselves, which would tend to the increase of rent. Besides, the capital of the farmer, if laid out in buildings, is locked up in permanent works, yielding him no annual return, and in which he has only a temporary interest; whereas, it would be more beneficial for both parties, that the farmer's capital were to remain at his command, for improvements that would yield him some yearly profit, or which might meet the failure of crops, and other casualties to which he is exposed.

In the Carse of Gowrie, where the farmers in general enter at Whitsunday, and then get possesion of the houses only, it is calculated, that it will require 10*l.* *per* Scotch, or 8*l.* *per* English acre, of capital, exclusive of rent, of payments for fallow done, or the manure to be purchased. Besides, the family and servants must be maintained for eighteen months, and the stock for about twelve months, before the farm produces any thing to the new-coming farmer.

In Fife, it is observed, that on all soils, poor or rich, the least sum that is necessary is two years and a half rent of the farm, free of debt. Three or four years' rent is still better; and five years' rent can be profitably employed in stocking a farm; but more is not required, unless great and expensive improvements are to be executed.

In the county of Clackmannan, about 1600*l.* is required to stock a farm of 180 Scotch acres. This is at the rate of nearly 8*l.* 18s. *per* Scotch, or 7*l.* 2s. 5d. *per* English acre.

In Stirlingshire, it is observed, that the sum required for stocking a farm, must vary according to circumstances, and the condition of the farm: In general, however, upon entering on a new lease, a farmer requires to be possessed of from 8*l.* to 10*l.* of capital, for every Scotch acre he means to occupy. This is at the rate of from 6*l.* 8s. to 8*l.* per English acre.

An intelligent farmer in Mid-Lothian informs me, that in the year 1754, he stocked a farm of 110 Scotch, or 132 English

CHAPTER V.

APPENDIX, No. 1.

GENERAL OBSERVATIONS ON IMPLEMENTS OF HUSBANDRY; AND AN ACCOUNT OF THE PRINCIPAL ONES FORMERLY MADE USE OF IN SCOTLAND.

AGRICULTURE, as it is an art of the most remote antiquity, is also the most extensive of all manufactures. With the machines which the ancients employed for the various purposes of husbandry, we are not at this distant period well acquainted; no particular account of their construction having been transmitted to our times; though at the era of the Roman invasion their mode of agriculture was probably introduced into Great Britain. The best manner of constructing the implements requisite for the various purposes of husbandry was for a long time neglected; and, even at the present moment, is not so much attended to as its importance merits; till of late years, they seem to have been thought of very little importance, and unworthy the notice of the scientific artist. It was imagined, that, however imperfect the instruments might be, they would answer sufficiently well for such rude purposes as breaking up, pulverizing, and cleaning the soil, and performing the other operations in husbandry.

The construction of these machines appears to have been for many ages left to persons, the most of whom were probably ignorant both of their mechanical principles and mode of operation. For even the plough itself, which has always held the first place among the implements of husbandry, was generally made, till of late years, without any regular plan or proper rule; and its form was varied according to the fancy of every workman or farmer. Errors in the construction of agricultural implements were unavoidable when the principles on which they ought to be constructed were unknown; and, though many of them have recently been greatly improved, and new ones invented, yet much still remains to be accomplished, before that degree of economy, convenience, and utility, can be generally attained, of which they are susceptible, and which their nature and importance so particularly require. Valuable additions and improvements are indeed daily appearing in many districts of Scotland; and there is scarcely any branch of mechanics which has received greater improvement within the last forty or fifty years, than that which relates to the construction of the implements of agriculture.

Since a taste for this most important of all arts has fortunately been of late diffused throughout the British Empire, men of great knowledge, rank and fortune, have been induced to patronize it; and persons of ingenuity, mechanical talents, and experience, have been encouraged to exert themselves, either in the improvement of the more useful of the old implements, or in the invention of new ones.

Among the variety of machines and instruments thus presented to the attention of the agriculturist, some, no doubt, may have appeared, that are too complicated in their construction, and too expensive to be generally adopted. Others, perhaps, from want of practical information in the inventor, have not been properly adapted to the particular purpose for which they were designed; in general, however, they have been such as to contribute essentially to the improvement of husbandry. The backward state of cultivation in several parts of North Britain, may be owing in some degree to the attachment of cultivators to such implements, however imperfect, as they have been long in the habit of using, in preference to better ones, that have been recently invented or improved, and to the unwillingness of the labouring servants to take the trouble, by a few trials, of acquiring facility in the management of the new-invented instruments.

In the construction of all sorts of machines, especially implements of husbandry, the principal object ought to be, to render them more perfect, easy, and expeditious, by introducing a system of economy, in regard to the labour, and also to the expense, that necessarily attend agricultural operations. No doubt, the nature and purposes of these instruments render it requisite, that the materials of which they are constructed be of a durable quality, so that the labour may be less liable to interruption from their accidental failure. But though the implements of husbandry require to be of a strong fabric, they should at the same time be made as neat and light as possible, consistently with the necessary strength. They ought likewise, as far as convenient, to be few in number, and of a simple or plain construction, that they may be well understood, and easily repaired; and their price should be as moderate as possible, that they may be procured by the poorest, as well as by the richest husbandman. The utmost care ought always to be taken, to reconcile farm-servants to their use; as nothing has operated more unfavourably to the introduction of new-invented machines, than the aversion shown by the lower ranks to do justice to such inventions. Besides, as farm servants often change their place of residence, when they find any tools with which they are unacquainted, they have sometimes been known to commit abuses, either from ignorance or obstinacy, and perhaps from both, even with the more perfect instruments, which they considered as innovations on the common old tools which they had been in the habit of using. But though, in any particular situation, the number of implements deemed requisite in the practice of hususe of carts very difficult; though at the same time it is to be regretted, that even where the roads and grounds would admit of their being used with advantage, yet their introduction is never once thought of. It is evident, nevertheless, that in districts where wheel-carriages cannot be employed, the inhabitants must be excluded from many advantages that arise from the use of these necessary and valuable machines.

Such were the chief implements formerly made use of in the Highlands and Islands of Scotland, for the purposes of husbandry and conveyance. However defective they certainly are, it does not perhaps exceed a century, since the same or similar imperfect implements of agriculture, and machines of conveyance, were made use of in many other parts of the British empire.

CHAP. V. APP. NO. 2.

AN ACCOUNT OF JAMES SMALL; AND OF HIS IMPROVEMENTS IN MAKING INSTRUMENTS OF HUSBANDRY.

By SIR JOHN SINCLAIR.

NEXT to the pleasure of promoting the improvement of a country, by personal exertions, is the satisfaction of doing justice to the merit of those who have distinguished themselves by their successful efforts in the accomplishment of that object. I am thence induced to give some account of a native of this country, JAMES SMALL, to whom Scotland, and the agricultural world in general, are peculiarly indebted. That is the more necessary, as the services of this useful mechanic have not hitherto been sufficiently known or appretiated.

James Small was born at Upsetlington, in the parish of Ladykirk, and county of Berwick, about the year 1740. His father's only profession was that of a farmer. Under his superintendance, his son, the late James Small, was instructed in all the various branches of agricultural labour; a knowledge, of which he afterwards experienced the advantages.

Young Small was first bound as an apprentice to a country carpenter and ploughmaker, at Hutton, in Berwickshire. He remained in Scotland for some time after his apprenticeship was over; but about the year 1758, he went to England, where he worked with a Mr Robertson at Doncaster, in the making of waggons and other wheel carriages.

It was in the year 1763 that he settled at Blackadder Mount in Berwickshire, under the patronage of John Renton, Esq. of Blackadder. He there set up a manufactory of ploughs and other agricultural implements; and as he at the same time occupied a farm of considerable extent, he had an opportunity of trying many experiments, which he might not otherwise have been enabled to attempt. He there contrived a device for ascertaining the best shape of the mouldboard, by making it of *soft wood*; by means of which, it soon appeared, where the pressure was the most severe, and where there was the greatest friction.

When he first settled at Blackadder Mount, the old Scotch plough was almost solely in use throughout Berwickshire. It was drawn by a pair of horses, with the addition of four, and sometimes of six oxen; the smallest number was a pair of horses, and a pair of oxen, attended by a driver.

He began with trying experiments on his own farm, with ploughs of smaller sizes, and of different forms, proving, by a steel-yard with a stronger spring than usual, which of them performed the best work with the least force of draught.

Some persons are impressed with an idea, that he had no other merit but that of introducing into Scotland the Rotherham plough, or reviving a plough that had been made by an itinerant ploughmaker called Lomax, or Lummas, many years before, but which had fallen into disuse, neither of which however is the fact. That he was well acquainted with the Rotherham plough, appears from his own treatise on ploughs and wheel carriages (p. 172); and he probably would adopt any particulars in the construction of that plough which might appear advantageous:* but it is well known that he improved his own plough *gradually, and by means of repeated experiments*; and there is positive evidence, that, instead of the Rotherham, the old Scotch plough was the foundation on which he proceeded. Besides the testimony of Lord Kames, to be afterwards quoted, his bookkeeper, Hector Heatlie, in a letter to one of the late James Small's sons, states, "That when his father began business at Blackadder Mount in 1763, there was nothing used in Berwickshire but the old Scotch plough, a comparatively very awkward instrument, which went with two oxen and two horses, and indeed often with four oxen and two horses. *Your father, observing the faults about her*, made and introduced a plough with the broad sock; she was a short little plough, with a wood mouldboard, and round in the breast. You know what I mean. The mouldboard was round on the top, and not straight, which consequently made her worse to draw. This plough was much esteemed, and she was far easier drawn, and made tolerable neat work, especially on ley ground; but your father did not stop there, but contiuued to make some additional improvements on her."

---

* There were a few Rotherham ploughs in Scotland at that time, and I am informed that moulds were got by a gentleman in Forfarshire from a wright at Grindon in Northumberland, who had travelled with Lummas.

Indeed, any mechanic who will take the trouble of examining the beam, the sheath, the handles, the coulter, and the muzzle or bridle of Small's improved plough, with the old Scotch one, will find the parts similar; and Mr Gray, who is so thoroughly acquainted with the construction of ploughs, is of opinion, that the superiority of Small's plough in a great measure consists in this, that its different parts are made neater and lighter than in the old Scotch plough, and that these parts are so much better combined together, that the line of traction, and the centre of gravity of the plough, perfectly coincide, the line of draught (as will appear from the annexed engraving) passing through the centre of resistance.

Like other ingenious men, James Small was distinguished by simplicity of behaviour, and modesty in his pretensions; he did not, therefore, bring himself forward, nor do himself that justice to which he was entitled. In the introduction, however, to his Treatise on Ploughs and Wheel-carriages, he states, "The chief merit I claim in the following sheets is this, that I have given directions, by which any sensible workman may be enabled to make a plough *on my principles*;" thus claiming to himself the merit of an improved construction. In that assertion no person ventured to contradict him, whilst he was alive to defend his own pretensions to the credit of his improvements.

In regard to the merits of Mr Small's plough, they arise from this, that the sock and the mouldboard are formed according to strict mechanical principles; and that those parts which enter the earth, and cut up the furrow, have that equal tapering, or sharpened wedge-like form, which occasions the least resistance in raising the furrow-slice. The mouldboard, in particular, has that regular curve or twist, which not only lessens friction, in elevating and turning over the furrow-slice, but it also places and leaves that slice in the most proper position for the beneficial effects of the atmosphere, and the operations of the harrow.* Small has also the sole merit of inventing and modelling the mouldboard, and other parts of the plough, in cast metal, which contributed so much to the speedy extension of that valuable instrument.

It is a striking proof of the excellence of his plough, that many ploughmen in Berwickshire, for their own ease and satisfaction, offered to be at the sole expense of the wood work, if their masters would supply them with Small's plough, and would defray the other charges of the implement.

---

* Mr Kerr considers the peculiar advantages of Small's plough to arise from this, that at its anterior part it is an exceedingly thin wedge, and therefore cuts the plit from the fast land, with the smallest possible resistance, aided by the broad thin feather of the sock, which cuts off the plit below from the subsoil. The mouldboard gradually increasing, the obtusity of the wedge-form gradually turns over the plit in a proper manner, instead of having all its work to do at once, against the whole resistance. It was experimentally proved, before the Dalkeith Farming Society, that Small's plough, in tearing up old ley, was drawn by a force of from 9 to 10 cwt., while the old Scotch required a force of 16 cwt. to perform the same work, in the same field.

The celebrated Henry Home, Lord Kames, who was a friend to merit, and an ardent promoter of agricultural improvements, warmly patronized Small's exertions. In his Gentleman Farmer, 4th edition, Chap. I. p. 5, he says, 'I boldly recommend a plough introduced into Scotland about twelve years ago, by James Small in Blackadder Mount, Berwickshire, which is now in great request, and with great reason, *as it avoids all the defects of the Scotch Plough;*'—evidently declaring, that the object of Small was, not to bring into use a new plough, but to remedy the defects of the old-established implement of the country; and his sons positively affirm, that during all the period whilst their father was attempting to improve his plough, they never recollect to have heard him mention the Rotherham plough; and they are certain that there never was one of them, either in his manufactory, or on his farm.

In consequence of the great improvements made by James Small on this implement, instead of two or more horses, together with two or more oxen, formerly used, and a driver; Lord Kames himself had the satisfaction of seeing scarcely a plough with more than two horses and the ploughman, in the lower part of Berwickshire; and he then prophesied, what has since taken place, that the practice would become general. It may be now considered as universally established over all the improved districts of Scotland. The saving thereby made in the expense of cultivation can hardly be calculated.

It was by Lord Kames's encouragement, and at his particular request, that James Small was prevailed upon to draw up a treatise on ploughs and wheel-carriages, which was printed after his Lordship's death in 1784. This is certainly one of the best and most useful, as well as one of the earliest publications, on this interesting subject. In that treatise he gives a distinct and scientific account of the principles on which ploughs and wheel-carriages ought to be constructed.

When a *Farming Society* was established in Ireland, consisting of the most respectable characters in that spirited and improving country, they ordered this treatise to be reprinted; in consequence of the circulation of which, numbers of Small's improved ploughs were sent to Ireland. The demand became so great, that the Society resolved to send over a person to Scotland, (Mr Robert L'Estrange), to learn the art of making Small's ploughs, and other agricultural implements. With the utmost liberality and public spirit, though attended with much detriment to their own personal interests, every information was most readily given by Alexander Small and Company, who continue their father's profession, that they could possibly furnish;

and the Society have since erected a manufactory for these implements, under Mr L'Estrange's superintendance, which has spread these ploughs over the greatest part of Ireland.

It was about the end of the year 1779, or the beginning of the year 1780, that James Small made a pattern in wood for the mouldboard, and also for the land-side plates of his plough, and he took them with him to Carron, where he got them cast. They were so well shaped, and answered the purpose so well, that they gave the highest satisfaction both to gentlemen and farmers. Some years afterwards, he made another important improvement, that of getting the sheath and head, which were formerly of wood, made of cast-iron, by which they were rendered much less liable to injury; and indeed, when the head formerly gave way, the plough was often rendered useless. The plan of making these parts of the plough of cast metal, was one of the most important improvements ever effected in agricultural machinery; and, without which, Small's plough could never have spread so rapidly as it did over all Scotland. But when ploughmakers were thus furnished with the most difficult parts of the plough, according to the most approved models, ready for putting together, the rest of the implement, more especially after Small had explained in his treatise the principles on which it was to be formed, was much more easily constructed.

The difficulties James Small had to contend with, to introduce his plough, even in his own neighbourhood, were very great, of which the following instance is recorded. The late Mr Lumsdaine of Blanerne, was one of the first who ordered the new improved plough; but his servants did all they could to prejudice their master against it, pretending it did not go well, &c. Small was then obliged to appear in the field himself; and, taking the plough into his own hand, he proved to Mr Lumsdaine, and all his ploughmen, how well it could work. Had he not been a good ploughman, as well as an able mechanic, he could not have thus triumphed over those who opposed the introduction of his improvements.

Having established his plough in Berwickshire, Small wished to introduce it into Mid-Lothian, where it had met with much opposition; but being confident of the superiority of his invention, he offered to make a comparative trial. In consequence of that challenge, a competition of ploughs took place in a field near Dalkeith, in presence of many gentlemen and farmers from Berwickshire, Mid-Lothian, East-Lothian, &c. A number of ploughs were brought forward; as, the old Scotch plough; several English ploughs; a plough by Mr Hutchison, with an iron wheel, &c.; but Small's was successful;—the judges having decided, that it did the best work, and was considerably lighter in the draught than any of the others. In consequence of the success of his plough at this public trial, it spread rapidly over all the different counties in Scotland, and has since been adopted in many parts of England, Wales, and Ireland; and in many foreign countries.

Small's plough has likewise been successful in many other competitions, in England, and in Ireland, as well as in Scotland, which it is unnecessary here to detail.

It is proper, also, to remark, that he made several improvements in other agricultural implements, besides the plough;—as in harrows, rollers, winnowing machines, and wheel carriages.

It was a rule with James Small, that whatever piece of work he undertook, whether the making of a cart or plough, or any other implement, it should be made complete; and so anxious was he, that his implements should give perfect satisfaction, that rather than suffer any insufficient work to be sent from his manufactory, he would break it to pieces, whatever loss he might thereby sustain.

There was nothing, however, by which he was more distinguished, than by his zeal to promote useful improvements in the department of agriculture.

One who knew him well, having been formerly his bookkeeper, affirms, "that to serve his country in the line of his profession was his incessant object, and to which he had so great a propensity, that to it he sacrificed his ease, his health, his strength, and his substance." Had it not been for this turn of mind, James Small might have left behind him a competence for his family; but instead of thinking of his pecuniary concerns, he was constantly trying experiments, and making improvements in machinery. When his ploughs were sent to any distance, he was often under the necessity of attending to see them tried, and to refute any objections that might be made to them. This occasioned, not only much loss of time, but expense. He also lost considerably, by publishing his Treatise on Ploughs and Wheel-Carriages, which enabled others to rival him in that branch of business. In fact, he had such a propensity to be useful, that he laid personal interest too much aside. He had the satisfaction, however, of performing services to his country, to which I have endeavoured to do justice, from information the authenticity of which may be relied on, and to leave a character behind him, which will long be remembered with respect. By him, an implement was constructed, which has materially diminished the expense of cultivation—which will answer in every soil—which will turn out the cleanest and deepest furrow with the least force of draught—and which, on the whole, is better adapted, *for general purposes*, than any plough that has hitherto been seen or heard of.' *

---

* That intelligent practical farmer, Robert Brown, Esq. of Markle, in his recent Treatise on Rural Affairs, Vol. i. p. 236, remarks, that under a parity of

James Small died in the year 1793, about the 53d year of his age. Of him, it may be safely affirmed, that a man possessed of more public zeal, and of a greater turn for mechanical inventions, has rarely appeared in any age or country.

DESCRIPTION OF SMALL'S PLOUGH.

In order that the reader, who may not have seen this plough, may be enabled to form a just conception of its construction, an engraving is annexed, which will be perfectly intelligible, with the aid of the following references.

References to the Engraving of Small's Plough.

Fig. 1.—*The left-hand, or land side, of its wooden frame.*

A B, represent the beam; C D, the sheath fixed into the beam at D; and its lower end C, serves for the sock or share to be fixed upon.

E F, the left hand or larger handle, placed upon the beam at B, and the lower end is fastened to the sheath at E; by which the sheath is supported against the resistance that the sock is exposed to in passing through the ground. There is also an iron bolt goes up through the frame at E, and is secured by a screw-nut on the upper side of the beam. By this means, the beam, the larger handle, and the sheath, are kept firm together.

Fig. 2.—*Plan, or bird's-eye view, of this machine.*

A B, the beam; B C, the larger handle; D E, the right hand, or lesser handle, attached to the larger one by the iron rod F, and the wooden roundels G H.

Fig. 3.—*The land, or left-hand side of the plough, when completed.*

AB, the beam; B C, the larger handle; E F, the coulter fixed into the beam at F.

G H I, the sock or share, placed upon the lower end of the sheath.

H K L M, are plates of cast iron, nailed upon the land-side of the plough, to prevent the wood from wearing, by rubbing on the firm land.

L M, the hindermost end of the mouldboard.

Fig. 4.—*The right-hand, or furrow side, of the plough.*

A B, the lesser handle; B C, the beam; D E, the bridle or muzzle, placed upon two iron bolts, which pass through holes

---

of circumstances, the swing plough brought into practice, and afterwards improved by Mr Small, is fitted for executing work to better purpose, than any other of the numerous varieties of that implement, employed in the several districts of Great Britain.

In its arms, and the fore-part of the beam; E F, the chain, and swing or cross-trees, to which the horses are yoked.

H, the coulter; K H I, the share; L M N I, the mouldboard; its fore-part M I, is fastened to the sheath, and its back-part fixed on the lesser handle.

ig. 5.—*The upper side of the plough ready for working.*

B, represent the larger handle; B C, the beam; D E, the bridle, having a few holes in its fore part, by which the draught-chain can be shifted a little to either side, and cause the plough take a broad or narrow furrow-slice, as may be found necessary. In the cross D, are also several holes, by which the depth of the furrow can be regulated, by shifting the bolt that passes through the cross D, and the beam. See D, fig. 4.

F, the chain, and swing-trees, to which the horses are attached when ploughing.

H, the lesser handle; I L M, the fin or feather of the share.

ig. 6.—*The under side of the plough.*

B, the larger handle; B C, the beam; D E, the lesser handle; E F G, the share; G H, the sole; and I E K L, the mouldboard.

ALEXANDER SMALL AND COMPANY, the sons of this ingenious echanic, have lately reduced the weight of the plough considerbly, for light land, (from 141 to 105 lib.), so that it will suit a ingle horse, of a strong make, or a pair of small horses. The rice is also diminished from 4*l.* 4s. to 3*l.* 10s. Their manufacure is carried on at Leith Walk, near Edinburgh, where those who may wish to encourage ingenuity, may be furnished with loughs and other instruments of husbandry, of the best construction.

CHAP. V. APP. No. 3.

ON THE IMPROVED CART.

IN the cultivated districts of Scotland, the construction of the farm-carts is improved by widening their body, so that the sides extend over the inner ends of the naves or centre blocks, nearly to the spokes of the wheels; by this means the cart can be shortened, the weight brought more immediately upon the axle, and the cart still contain the same load. The body being thus shortened, and the weight removed nearer to the centre of the axle, its framing may be made considerably lighter than that of the long narrow cart. Besides, by shortening its body, while the shafts are continued at the full length, the horse has more command of the cart with its load, by the shafts operating as a lever, the power of which will be increased in proportion as the body of the cart is shortened. Although the longer cart, if the load is properly balanced, may be as easily drawn upon a smooth road, as the short one with an equal load, yet, when the wheels meet with any obstacle on the road, or fall into a deep rut, the long cart will receive a much greater jolt than the short cart, from its two ends being so much farther removed from the centre both before and behind the axle; of course, the long cart will be much more severe upon the shaft-horse than the short one.

By extending the breadth of the cart above the naves of the wheels, an additional width is obtained without lengthening the axle, which would be attended with great inconvenience, because the wheels being placed at so great a distance from each other, would not only be troublesome in going through any narrow pass, but also more severe on the shaft horse in turning. It is well known that a horse draws with the greatest advantage with a moderate weight on his back; therefore the best form of a cart for level roads, must be that in which the centre of gravity of the cart with its load is so far before the centre of the axle, that the horse shall bear a certain proportion of the load. This weight ought to be increased in going up hill; and in going down hill, it should be diminished, by throwing the centre of gravity behind the axle. These advantages may be easily accomplished, by lengthening the back-chain a few links when going up hill, and shortening this chain a few links when going down hill, or any steep path.

CHAPTER VI.

APPENDIX.

Of the Size and Shape of Fields.

From the Husbandry of Scotland.

This is a point which, in so far as regards arable culture, has been brought to a considerable degree of perfection, according to the system of husbandry adopted in the more improved districts of Scotland. Nothing can be more absurd, with a view to the culture of grain, than to have a number of small enclosures, irregularly shaped, surrounded with high hedges and trees, and such a system perhaps general in a flat country, where so much shelter is unnecessary. Such a plan is peculiarly reprehensible, where horses and cattle are the principal objects of attention, as soiling (or giving them cut green food in yards, or houses) is greatly preferable to pasturage. On these grounds, it is proper to explain, what in Scotland is considered to be the best size of fields, in an improved arable district, and the principles on which that system is founded. *

The circumstances on which the size of fields ought to depend, are principally the following.

1. The extent of the farm in which they are situated; 2. The nature of the soil or subsoil; 3. The rotations adopted; 4. The number of ploughs on the farm; 5. The command of water; 6. Access to roads; 7. The elevation of the ground; 8. Its being in pasturage or otherwise; and, 9. The nature of the climate.

1. *Extent of the Farm.*—The size of fields ought certainly, in some measure, to depend on the extent of the possession. In small farms near towns, from six to twelve acres may be sufficient; but where farms are of a proper extent, they are from twenty to even fifty acres, and in some instances as high as sixty. One of my correspondents indeed states, that his enclosures are about twenty Scotch, or twenty-five English acres each, and that he would certainly enlarge them, were he not restricted to that size by his lease. Mr Brown of Markle, whose knowledge in every branch of agriculture is so well known, considers a field of thirty Scotch, or thirty-eight English acres, to be a proper medium size, when permitted by local circumstances, for large farms.

---

* So inveterate is the prejudice for *small fields* in England, that though the expense of fencing has now become enormous, they are still persevered in, even in new enclosures, under the authority of acts of parliament, by which the charges of that important branch of agricultural improvement are greatly increased.

2. *The Nature of the Soil and Subsoil.*—The best size of fields for arable cultivation, must always depend upon the nature of the soil and subsoil. When the soil is chiefly dry, it is of consequence to have the fields large, as it tends to accelerate the ploughing, harrowing, reaping, &c.; but when it happens to be strong clay, it then becomes a matter of prudence, to contract the size of the fields, chiefly for the purpose of keeping them as dry as possible. * In dividing a farm, however, it is proper to separate the light and the heavy soil. They are not only better calculated for different crops and different rotations, but are fit to be wrought at different seasons. It is a fortunate circumstance, when a farmer possesses as much ground of each kind as will make a full rotation, so that both may be carried on at the same time. In turnip soils, the following plan has been recommended by Mr Carnegie of Hailes, in East Lothian. Where the farm would admit of it, he would divide the whole into eight fields of thirty acres each, under a rotation of, 1. Turnip; 2. Wheat and Barley; 3. Grass; and, 4. Oats: and he would have two breaks or divisions in each field, one half (or fifteen acres) of the enclosure in turnips, and the other in grass; and, when ready to consume the turnips, he would strip one half of them, and give them to the sheep on the grass. He would then move back the flakes or hurdles, and would allow the remaining half to be consumed on the ground, with liberty to the sheep to pasture over the whole grass, while eating the turnips, taking care never to give the stock more than a certain number of days' turnips at a time. Thus, there would be four fields with white crops, after turnip and grass. † Others recommend giving the sheep as many fresh turnips each day as they can eat, as the turnips, when not consumed on the day given, are often damaged by the wet and frost, or destroyed by the sheep going over them. Mr Walker of Mellendean concurs in opinion, that on turnip soils, where it is necessary to consume the turnips upon the ground, the fields should never much exceed thirty acres, if the situation will admit them to be made of that size. When they are larger, it becomes difficult to give the sheep the quantity necessary at a time, without confining them all round with nets or hurdles, which is always attended with much loss. When one division is done, and a new one taken in, the sheep should always have liberty to fall back, and rest upon the cleared ground, which they naturally do, by which means the turnips are kept much cleaner, and a great deal of meat saved; and he has al-

---

* Remarks by Mr Rennie of Kimblethmont.

† It is stated, as an objection to this plan, that the grass land could not be ploughed and sown, till the turnips were consumed, which would render it impossible to have autumn wheat upon the clover ley; and even the oats in March, could not be sown in time for the last of the turnip.

ways found, that a field of the above dimensions, will contain as much stock, of any kind, as can be fed together with advantage.

3. *The Rotation adopted.*—It is considered to be a proper rule, that whatever is thought to be the rotation the most suitable to the soil, the fields should be, in some measure, apportioned accordingly: that is to say, a farm with a rotation of eight courses, should in general be divided into eight fields; six courses into six fields; five courses into five fields, and four courses into four fields or enclosures. † That rule is laid down by Mr Murray, (Kirklandhill), with a view of having the whole field under one crop. At the same time, on a farm of 400 acres, under a four years' rotation, instead of having four fields of 100 acres each, it would be better to have the farm divided into eight fields of 50 acres each, and having two of these fields under one kind of crop. It is proper likewise to observe, that where the climate is uncertain, and the soil various, the following judicious practice has been adopted, that of having a proportion of every kind of grain cultivated in the strong part of the farm, and another portion in the lighter part. This gives the tenant a fair chance to have an equal crop whether the seasons are dry or wet, and whether they are favourable to the one species of soil or crop, or to the other.

4. *Stock on the Farm.*—It has also been observed, that the size of the fields should be somewhat in proportion to the number of horses and ploughs on the farm; for instance, where six two-horse ploughs are kept, and where it is difficult, from the nature of the soil, to keep fields of a larger extent sufficiently dry, fields of from eighteen to twenty-two English acres, are considered to be a convenient size: there is less risk, in that case, of being overtaken by bad weather, and prevented from completing the preparation of the land for the intended crop; for with twelve horses in the spring season, a field of that size can always be finished in four days. * In regard to the live stock not employed in the culture of the farm, it is well known, that cattle feed better in small numbers, than in great herds.

---

† The size, it is said, should be equal to the fallow-break, or the portion of the farm under fallow. The fields under fallow should be of the average quantity of the farm, and the other crops will become so of course. Every farmer of experience endeavours to have, and knows the comfort of having, the produce of the farm, as equal every year, as the soil and circumstances will admit of. On this subject, Mr Stewart of Hillhead remarks, that though it may answer the farmer *in possession*, to have the farm divided according to the rotation he practises, yet that it will be found generally advantageous *for the proprietor*, to have it divided into double the number of fields that may be required for a four or a five years' rotation, in case any alteration of system should become necessary.

* Remarks by Mr Peter Mitchell in Stirlingshire, and Mr James Cuthbertson in East Lothian. On this subject, Dr Young of Stonehaven justly ob-

5. *Water.*—It is necessary in every field actually to be pastured, to have a supply of water, the command of which is more likely to be obtained in large, than in small enclosures. A correspondent, whose fields are small, complains of their being so ill-watered, that the stock, when pastured in some of them, cannot get a supply, even in winter.

6. *Roads.*—It is essential that each field should have convenient access to the farm-road: So obvious a point need not be dwelt upon.

7. *Elevation of the Ground.*—It is also evident, that the size of the field, ought in some respects to depend on the flatness or elevation of the ground. Even on dry land, if there is a rise on the ground, from fifteen to twenty chains is length sufficient; for where the ridge is longer, the horses are too much fatigued, if compelled to plough a strong furrow, up-hill, farther in one direction.

8. *Pasturage.*—Where the system of grazing and tillage is alternately followed, (more especially where the fields are pastured for two or three years or more), it is convenient, to have the fields about twenty-two Scotch, or twenty-seven English acres; because the farmer generally wishes to have his stock divided, which cannot well be done with larger fields; and if they are of a smaller size, too much ground is occupied with fences. Besides, if grass fields are let for pasture, such a size suits graziers best; and consequently they rent considerably higher, than fields would do of a larger, and consequently a more inconvenient description. Unless where there are small fields near the house, it is desirable to have some part of the green crops near the farm-offices. For if the fields are all large, the whole lot of turnips or clover might be removed to the outward boundary of the farm; whereas, if fields are of a moderate size, it is possible to have a part of these crops at a convenient distance. *

---

serves, that the fields should be of such a size, as to admit the operations going on upon them, to be finished in a short time, by the stock on the farm. If the fields are of too great an extent, in proportion to the stock kept, a considerable interval must occur between the sowing of the first and last part, especially of barley and big, where generally the last ploughing and sowing take place together; and it will in general be desirable, to have the whole fields cleared at once, in harvest. There will also be a saving of labour, particularly in the instance of harrowing a crop in seed-time; as, in ordinary sizes of fields, the sowing can be soon accomplished; by which the frequent turnings are avoided, that would otherwise take place, if it were necessary to sow the field in several portions. Whenever rolling is required, whether for grass seeds, for reducing the ground, or any other purpose, much of its benefit may be lost, in an extensive field, because, being usually done across, it cannot well be accomplished till the field is completed.

* Remarks by Mr Brown, Cononsyth, by Arbroath. Another correspondent observes, that some extent is desirable for fields in pasture, to attend the stock pasturing over its surface. Fields from ten to twenty acres, however, are large enough for grazing. When few cattle are put together, they remain more quiet, than when there are many, which is very desirable for fattening stock.

9. *Climate.*—The last circumstance to be considered in determining the proper size of fields, is the nature of the climate. In dry and cold climates, small enclosures are desirable, on account of shelter: whereas, in wet countries, the fields under culture cannot be too open and airy, for the purpose of drying the ground, of bringing forward and ripening the grain, and of enabling the farmer more easily to secure it, during any unfavourable harvest, by a free circulation of air.

It is now proper to make some observations on the shape of fields, the form of which should be square in strong, and oblong in turnip lands, uniformity of soil being at the same time attended to.

Square Form.—It is evident that it is advantageous to have the fences in straight lines, and that fields, when large, should be square,[*] and when small, more especially in turnip soils, of an oblong form, in order that the ploughing may be despatched with as few turnings as possible. Some people, whose farms are of a waving or uneven surface, and who enclose with hedge and ditch, carry their ditch through the hollows or best soil, with a view of raising a good hedge; thus, often sacrificing, for the sake of the fence, the form of their field. A straight line, however, is preferable, even though it should be necessary to take some particular pains to enrich the soil for the thorns, when it is thin and poor, on any elevation.[†] By means of the square form, an opportunity is afforded, of ploughing in every direction, when necessary, and less time is lost in carrying on all the operations of husbandry in a field of that form, than of any other shape. Where the waving form is necessary to secure proper water-runs, plantations may be so disposed, as to reduce the fields to squares or oblongs, and the fences to straight lines.

Oblong Form.—An intelligent correſpondent is decidedly of opinion, that all farms, more eſpecially thoſe of a light ſoil, are beſt divided into oblong fields, becauſe, when occupied either as a grazing, or a breeding farm, oblong fields are ſo eaſily and ſimply ſubdivided, and water can almoſt in every caſe be got, by making proper ponds, in the meeting or joining of three or four fields, the gutters or ditches of which fields will convey water to the ponds. This is a great advantage in fields under a turnip crop, as it is eaſier to cut off, or divide the turnips with hurdles or flakes, or nets, &c.; and the ſheep can be fed off with the greater convenience; always

---

In a wet autumn, much grass is destroyed by treading, and in large fields more grass is destroyed by the feet of the cattle, than consumed by their mouths.

[*] Mr Kerr justly remarks, that in hanging grounds, the ridges and furrows ought always to have so much obliquity, as to reduce the field nearly to the circumstances of one situated on a plain. The operations of ploughing, harrowing, carting, &c. are thus materially facilitated, and the filling up, or sanding of the furrows, effectually prevented.

[†] Remark by Mr Church, Hitchill, near Annan.

keeping in view, to take off a certain proportion of drills, for giving to the feeding cattle in the ſheds or folds, &c., or to ſheep upon the adjoining stubbles or paſtures, in proportion to the ſtate the ground is in; land in a rich ſtate having the greater proportion taken away. Nor is it any objection to the oblong ſhape, that the ridges may be too long, as that can be eaſily obviated by croſs head-lands or head-ridges, which in any ſoils can be made at any place, according to the length of ridge moſt agreeable to the taſte or opinion of the proprietor or occupier.* Even where the land has a wet, damp, or retentive ſubſoil, an oblong form may be adviſable, for the head-ridges can be made in thoſe parts moſt ſuitable for taking off the the water, as well as to ſuit the proper length of the ridges, with gutters or gripes where requiſite.

Uniformity of Soil.—It is neceſſary, at the ſame time, to attend to uniformity of ſoil; and many farmers have to lament, that the encloſures on their farms are laid out, more with a view to beauty than utility, and that regularity and uniformity of appearance have been chiefly kept in view, whilſt little regard has been paid to a point infinitely more eſſential, that of having the ſeveral fields of the ſame ſort of ſoil; hence, ſoils of the nature moſt heterogeneous, are thus unfortunately mingled in the ſame field. One farmer complains, that this principle has been ſo little attended to on his farm, that he has ridges, one half conſiſting of a strong wet clay, and the other half of a ſandy ſoil fit for turnips. A ſpirited correſpondent propoſes to obviate this objection, by altering the texture of the ſoil. He obſerves, that there are fields, partly conſiſting of ſtrong ſoils, and partly of light, where probably there are not above one or two acres of the latter, for ten or twenty of the former; and where almoſt every year the culmiferous crops fail on the light soils from drought. He therefore ſuggeſts, that at any ſlack time, whether in winter or ſummer, when the field is under fallow, it would be proper to employ two carts and horſes, with four fillers, and to cover the acre or two of light ſoil, with the ſtrong ſoil contiguous. Draining perhaps would, in the firſt place, be neceſſary; but the ſoil in the field would ever after be uniform. In fields where light ſoils predominate, the ſame plan reverſed might be adopted. The principal objections to this plan, are, 1. The expenſe, and 2. That the ſubſoil remains the ſame; but the idea is certainly excellent, wherever it is practicable.

The advantages of attending, as much as the circumſtances of the caſe will admit of, to the principles above laid down, ſhall now be ſtated.

1. Every farmer who has attended to the ſubject, will admit, that

---

* On this ſubject is is remarked, that head-lands are never admiſſible, except to get rid of wet, or in conſequence of deviations of ſoil; and hence a difference of culture: and that ridges cannot be too long, where land is encloſed, as it gives occasion to fewer turnings, and is ploughed at leſs expenſe of time and labour.

it is a material drawback to cultivation, if the fields, inſtead of being regular in ſize or form, are laid out arbitrarily, without attention to any judicious ſyſtem; and where the whole farm is divided into fields of various ſizes, from 5 to 10, and thence to 20 or 30 acres each, it is extremely difficult to equalize them, ſo as to ſuit any judicious rotation of crops; whereas, by having fields of a proper ſize, the whole ſtrength of a farm, and the whole attention of the farmer, is directed to one point, which gives an emulation to the ploughmen, when they are aſſembled together.*

2. It is evident, that small fields are liable to many objections, Besides the original expense of the enclosures, and the injury to grain crops produced by want of circulation of air, and the shelter given to numerous small birds, the very site of numerous hedges, with their attendant ditches, and the uncultivated slips of land on both sides of them, rob the farm of a much greater quantity of arable land, in proportion, than when divided into large fields. The crops, in fields thus sheltered, must also be more liable to disease, as the rust and the mildew, the exclusion of air encouraging the growth of *fungi*, or the mushroom tribe. Hedges and ditches likewise, more especially if accompanied with hedge-rows, exhaust the ground near them of its fertility, whence the grain is of inferior quality; they nourish weeds, the seeds of which may be widely disseminated, or exclude the wind and drought after the crop is cut down, keeping it longer from being stacked. Even for meadows, these small enclosures are injurious, by preventing the circulation of air for making or drying the hay. Where fields, on the other hand, are of a proper size, less ground is wasted, there are fewer fences to uphold, and fewer birds to destroy; the crops of grain can be more early harvested, being more exposed to wind, and they are less apt to suffer in dry and clear weather; and though small enclosures are better sheltered in winter, which is favourable to the growth of herbage for pasture, yet the opener they are in summer the better; for in hot weather the cattle and sheep always go to the airiest places.† But the principal argument in favour of large fields is this, that in small fields, much time and labour is wasted by short turnings, &c.; hence an intelligent farmer (Mr Mitchell of Balquharn) has well observed, *that if fields are of a regular shape, and the ridges of a proper length, five ploughs will do as much work as six ploughs in fields of a small size, and of an irregular shape; and every other part of the business to be performed,*

---

* Rectangular fields of conſiderable ſize are advantageous, as it may be thereby known whether the ploughmen have done their duty; that is, if there is one man in the whole who can be depended on. Indeed, in fields of this ſhape, the work done, is known by the length of the ridges, and number of furrows, of a certain breadth, ploughed.

† Remarks of Mr Robertson of Almon.

as dunging, sowing, harrowing, reaping and leading, will be executed, though not altogether, yet nearly in the same proportion.

Some additional remarks regarding the size and shape of fields remain to be stated.

1. Though fields, on the whole, should be of a large size, yet there is a great convenience in having a few smaller fields near the farm-house; for family cows; for rams, on farms where sheep are kept; for trying, on a small scale, useful experiments; also for raising tares, lucern, sainfoin, &c. and for various other purposes.[*]

2. Where enclosures are found too large for particular purposes, the field may be effectually subdivided by sheep-flakes, or hurdles, a sort of portable fence, well known to every turnip-grower. When carefully set, they are a complete fence, at least for sheep. By this means great advantage is derived, from the constant use of the land that would otherwise have been occupied by stationary fences; and the expense of subdivisions, which, on a large farm, would necessarily have been numerous, is thereby avoided.[†]

3. In some cases, the size of fields should vary with the size of the farm, more especially when there is a diversity of soil. In a farm of 200 acres, it is contended, that there should be 8 enclosures of 20 acres each, and 4 of 10. In a farm of 300 acres, 8 enclosures of 30 acres each, and 4 of 15 acres; and in a farm of 700 acres, 8 enclosures of 50 acres each, and 12 of 25 acres. Thus dividing a farm into eight, twelve, sixteen, or twenty enclosures, according to its extent, and varying the mode of cropping according as the soil is light or strong, the strongest soils being put into the smaller enclosures.

Of such importance does it seem to Scotch farmers, to enlarge the size of fields, to reduce their number, and to put them into as regular a shape as circumstances will admit of, that it is one of the first circumstances attended to, wherever the Scotch system of husbandry has been introduced into any part of England. By means of that reduction, a considerable extent of ground is btained, and the land is rendered better calculated for the pro-uction of corn.

---

[*] Remarks by Mr Robert Kerr, the intelligent Reporter of Berwickshire; Mr Wilson of Simprin, and others. Mr Stewart of Hillside also observes, that it is often found convenient to have some small enclosed fields upon extensive farms, where the general plan of management is calculated for large fields. Besides the purposes mentioned in the text, it may sometimes be necessary to turn out young horses, mares and foals, and old horses, and to have small fields of ruta baga, and other winter and spring vegetables conveniently situated for the farm-offices, and distinct from the large fields. It might not answer the purpose, to have divisions for these in large fields separated by sheep flakes. Besides the expense and inefficacy of that plan, the succeeding crop might not suit that of the large fields.

[†] Hints from Mr Hunter of Tynefield, and Mr Cuthbertson, near Prestonpans.

Here it may be added, on the authority of a farmer, (Mr rown of Markle), who has paid particular attention to this sub-ct, that where enclosures are made by hedge and ditch, the antity of ground lost upon ten acres amounts to not less than e-tenth; in other words, that a ten acre field is reduced to the ze of nine acres, which is a strong argument against small en-osures.

I have been led to dwell longer than otherwise would have en necessary on the interesting subject of this section, as it is topic which has not hitherto been so much attended to as its portance deserves.

CHAPTER VII.

APPENDIX, No. I.

TABLES OF THE PRODUCE OF GRAIN, &c.

By J. F. ERSKINE Esq. of Mar.

Preliminary Observations.

THE following statement of the produce of a farm for several years, is not given as being complete, or as affording any rule for the construction of other Tables. It may help, however, to show what knowledge an accurate farmer might obtain, if he would but take the trouble of minuting every material circumstance that occurs in the sowing season; the kind of weather during the growth of the crop; and the character and accidents of the harvest: for although several of the particulars, at the time, might appear trivial, yet a regular account of them, taken year after year, would very possibly lead to conclusions of great importance in agriculture. If even similar accounts of the principal farms in this district, Clackmannanshire), could have been obtained, great information might have been gained: By them we should have been able to judge, whether the price of grain, by the fiars, proceeded from the good or bad seasons in the district, or whether (which is the most probable) they were affected more by the general price of corn in the country at large. By these Tables it appears, that even in some of the most unfavourable years, still some one kind of grain generally has a good produce.

The register would have been still more complete, if to this general account of the rate of the produce, had been added some other circumstances; such as, Why the quantity of seed varied in different years?—What was the particular quality of the soils of the several fields that were sown with the various grains?—How often the same kind of grain had been repeated on the different fields? &c.

There are also some omissions in the Tables of the produce, which is to be regretted; for no notice has been taken of the beans and peas crop, nor of the hay or pasture.

The Tables are therefore given merely to lead the minds of young farmers to accuracy in their proceedings. How satisfactory must it be to a young beginner to reflect, that every minute observation thus recorded, tends to improve his knowledge, and to make him more correct in the practice of agriculture? What pleasure must it not give him as he advances! What fund of information, of every kind, must it not afford, not only to himself, but even to those who come after him! It is from a wish to promote this attempt, that this statement has been extended; and the compiler has been induced to undergo the labour with cheerfulness, although the time it took, and the trouble of writing it up, were not small. To many people the Tables may appear ridiculously minute; but it is hoped, that none will deem them altogether useless. Had time allowed, some more particular hints would have been submitted on the great importance, and best mode, of keeping farm accounts—a business in which common husbandmen are too negligent; and gentlemen, cultivating their own lands, are still more so, often to their incalculable disadvantage.

An Account of the Seed and Produce of Wheat on a Scotch Acre, and the Value of it at the Fiars Price, during 15 Years, on a Farm in the County of Clackmannan.

Years.	Seed per S. acre.			Produce per S. acre.				Rate per Boll.		Value of the produce per S. acre.			Sheaves of Straw per S. acre.	Rate of Straw per Sheaf.	Value of the Straw per S. acre.			Total Value of the Produce per S. acre.			No. of Stooks to the Boll.		Increase after one of Seed.
	F.	*P.*	*L.*	*B.*	*F.*	*P.*	*L.*	*s.*	*d.*	*L.*	*s.*	*d.*		*d.*	*L.*	*s.*	*d.*	*L.*	*s.*	*d.*	*St.*	*Sh.*	
1781	2	2	0	10	0	2	3	18	0	9	3	1	471	$\frac{9}{12}$	1	9	$5\frac{3}{12}$	10	12	$6\frac{3}{12}$	3	10	16
82	2	2	3	10	2	2	1	23	0	12	4	$8\frac{9}{12}$	474		1	9	$7\frac{6}{12}$	13	14	$4\frac{3}{12}$	3	8	15
83	2	2	2	8	2	2	2	19	0	8	4	$5\frac{6}{12}$	467		1	9	$2\frac{6}{12}$	9	13	8	4	6	13
84	3	1	2	10	2	1	1	20	0	10	11	$6\frac{9}{12}$	566		1	15	$4\frac{6}{12}$	12	6	$11\frac{3}{12}$	4	5	12
85	2	2	1	9	1	0	0	18	6	8	11	$1\frac{6}{12}$	510		1	11	$10\frac{6}{12}$	10	3	0	4	7	14
86	3	1	0	7	2	0	0	18	6	6	18	9	470		1	9	$4\frac{6}{12}$	8	8	$1\frac{6}{12}$	5	2	9
87	3	1	0	8	0	3	0	19	6	7	19	$7\frac{9}{12}$	496		1	11	0	9	10	$7\frac{9}{12}$	5	0	10
88	3	0	1	6	1	2	2	20	0	6	8	$1\frac{6}{12}$	508		1	11	9	7	19	$10\frac{6}{12}$	6	6	8
89	2	2	2	9	1	1	2	23	0	10	14	$10\frac{9}{12}$	508		1	11	9	12	6	$7\frac{9}{12}$	4	6	14
1790	2	2	2	10	3	1	0	22	6	12	3	$3\frac{3}{12}$	633		1	19	$6\frac{9}{12}$	14	2	10	4	10	16
91	2	2	1	8	0	0	0	20	0	8	0	0	447		1	7	$11\frac{3}{12}$	9	7	$11\frac{3}{12}$	4	8	12
92	2	2	1	9	0	0	0	20	0	9	0	0	530		1	12	$1\frac{6}{12}$	10	12	$1\frac{6}{12}$	4	8	14
93	3	1	1	9	0	2	0	23	0	10	9	$10\frac{6}{12}$	480		1	10	0	11	19	$10\frac{6}{12}$	4	4	10
94	2	1	3	9	0	1	0	22	6	10	8	$10\frac{6}{12}$	605		1	17	$9\frac{9}{12}$	12	1	$8\frac{3}{12}$	4	4	15
95	2	1	1	7	0	1	1	45	0	15	18	$5\frac{6}{12}$	477		1	9	$9\frac{9}{12}$	17	8	$3\frac{3}{12}$	5	7	12
Average.	2	3	0	8	3	2	0	22	2	9	15	$5\frac{6}{12}$	509		1	11	$9\frac{3}{12}$	11	7	$2\frac{9}{12}$	4	8	12
Difference between the best and the worst Seasons.																							
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	0	22	6	12	3	$3\frac{3}{12}$	633		1	19	[illegible]	14	2	10	4	10	16

[illegible] roduce of Wheat on a Farm in the County of Clackmannan, on an average of 15 Years, from 1781 to 1795 inclusive, on an English acre, Winchester measure.

	Seed per E. acre.				Produce per E. acre.					Value of the Produce per E. acre.			Sheaves of Straw per E. acre.	Value of the Straw per E. acre.			Total Value of the Produce per E. acre.			
	B.	*P.*	*G.*	*Q.*	*Q.*	*B.*	*P.*	*G.*	*Q.*	*L.*	*s.*	*d.*		*L.*	*s.*	*d.*	*L.*	*s.*	*d.*	
Average.	2	0	1	3	3	4	2	0	0	7	13	$9\frac{9}{12}$	400	1	5	0	8	18	$9\frac{9}{12}$	Average.
1790	2	0	0	3	4	2	3	0	1	9	11	$5\frac{1}{12}$	498	1	10	$8\frac{9}{12}$	11	2	2	1790—Best Crop.
1788	2	2	0	0	2	4	2	1	3	5	0	10	399	1	4	$11\frac{9}{12}$	6	5	$9\frac{9}{12}$	1788—Worst Crop.
Difference.	0	1	1	1	1	6	0	0	2	4	10	$7\frac{1}{12}$	99	0	5	9	4	16	$4\frac{1}{12}$	Difference.

An Account of the Seed and Produce of Barley on a Scotch Acre, and the Value of it at the Fiars Price, during 15 Years, on a Farm in the County of Clackmannan.

Years.	Seed per S. acre.			Produce per S. acre.				Rate per Boll.		Value of the produce per S. acre.			Sheaves of Straw per S. acre.	Rate of Straw per Sheaf.	Value of the Straw per S. acre.			Total Value of the produce per S. acre.			No. of Stooks to the Boll.		Increase after one of Seed.
	F.	*P.*	*L.*	*B.*	*F.*	*P.*	*L.*	*s.*	*d.*	*L.*	*s.*	*d.*		*d.*	*L.*	*s.*	*d.*	*L.*	*s.*	*d.*	*St.*	*Sh.*	
1781	2	1	3	7	0	0	0	13	4	4	13	4	504	$\frac{6}{12}$	1	1	0	5	14	4	6	0	11
82	2	3	1	3	0	2	-1	23	0	3	12	2$\frac{9}{12}$	456		0	19	0	4	11	2$\frac{9}{12}$	12	1	4
83	2	2	1	7	3	0	2	18	6	7	3	11$\frac{3}{12}$	645		1	6	10$\frac{6}{12}$	8	10	9$\frac{9}{12}$	6	10	12
84	3	1	1	8	1	1	3	19	6	8	2	11$\frac{9}{12}$	757		1	11	6$\frac{6}{12}$	9	14	6$\frac{9}{12}$	7	9	9
85	2	3	1	5	2	0	1	16	6	4	10	9	578		1	4	1	5	14	10	8	8	8
86	3	0	0	8	3	1	1	18	0	7	18	10$\frac{9}{12}$	680		1	8	4	9	7	2$\frac{9}{12}$	6	5	11
87	2	2	2	7	3	2	2	17	0	6	14	4$\frac{9}{12}$	644		1	6	10	8	1	2$\frac{9}{12}$	6	9	12
88	2	2	2	9	3	2	0	14	6	7	3	2$\frac{9}{12}$	762		1	11	9	8	14	11$\frac{9}{12}$	6	5	15
89	2	0	2	6	1	2	0	18	0	5	14	9	600		1	5	0	6	19	9	7	10	11
1790	3	1	3	7	1	3	0	17	6	6	10	1$\frac{9}{12}$	672		1	8	0	7	18	1$\frac{9}{12}$	7	8	11
91	2	1	1	7	2	3	3	19	6	7	10	9$\frac{6}{12}$	530		1	2	1	8	12	10$\frac{6}{12}$	5	8	13
92	2	3	2	4	3	2	0	20	6	4	19	11$\frac{9}{12}$	585		1	4	4$\frac{6}{12}$	6	4	4$\frac{9}{12}$	10	0	6
93	2	1	3	6	2	3	0	19	6	6	10	4$\frac{9}{12}$	657		1	7	4$\frac{6}{12}$	7	17	9$\frac{9}{12}$	8	2	10
94	2	2	1	5	1	1	2	22	6	6	0	2$\frac{6}{12}$	563		1	3	5$\frac{6}{12}$	7	3	8	8	1	9
95	2	2	3	5	0	0	3	24	0	6	1	1$\frac{6}{12}$	578		1	4	1	7	5	2$\frac{6}{12}$	9	6	7
Average.	2	2	2	6	3	3	1	18	9$\frac{6}{12}$	6	4	5$\frac{9}{12}$	614		1	5	7	7	10	0$\frac{9}{12}$	7	0	10

Difference between the best and the worst Seasons.

[illegible]'s Farm in the County of Clackmannan, on an Average of 15 Years, from 1781 to 1795 inclusive, on an English Acre, Winchester measure.

	Seed per E. acre.				Produce per E. acre.					Value of the Produce per E. acre.			Sheaves of Straw per E. acre.	Value of the Straw per E. acre.			Total Value of the Produce per E. acre.			
	B.	*P.*	*G.*	*Q.*	*Q.*	*B.*	*P.*	*G.*	*Q.*	*L.*	*s.*	*d.*		*L.*	*s.*	*d.*	*L.*	*s.*	*d.*	
Average.	3	1	0	0	4	3	0	0	0	4	17	11$\frac{6}{12}$	481	1	0	1$\frac{6}{12}$	5	18	1	Average.
1788	3	1	0	3	6	1	2	1	2	5	12	8$\frac{6}{12}$	599	1	5	0	6	17	8$\frac{6}{12}$	1788—Best Crop.
1782	3	2	0	2	1	2	3	0	1	2	16	10	355	0	14	11$\frac{6}{12}$	3	11	9$\frac{6}{12}$	1782—Worst Crop.
Difference.	0	0	1	3	4	6	3	1	1	2	15	10$\frac{6}{12}$	244	0	10	0$\frac{6}{12}$	2	15	11	Difference.

An Account of the Seed and Produce of Oats on a Scots Acre, and the Value of it at the Fiars Price, during 15 Years, on a Farm in the County of Clackmannan.

Years.	Seed per S. acre.			Produce per S. acre.				Rate per Boll.		Value of the Produce per S. acre.			Sheaves of Straw per S. acre.	Rate of Straw per Sheaf.	Value of the Straw per S. acre.			Total Value of the Produce per S. acre.			No. of Stooks to the Boll.		Increase after one of Seed.
	F.	*P.*	*L.*	*B.*	*F.*	*P.*	*L.*	*s.*	*d.*	*L.*	*s.*	*d.*		*d.*	*L.*	*s.*	*d.*	*L.*	*s.*	*d.*	*St.*	*Sh*	
1781	3	1	3	6	0	3	0	11	6	3	11	$1\frac{9}{12}$	341	$\frac{9}{12}$	1	1	$3\frac{9}{12}$	4	12	$5\frac{6}{12}$	4	7	7
82	3	3	0	4	2	2	0	16	0	3	14	0	450		1	8	$1\frac{6}{12}$	5	2	$1\frac{6}{12}$	8	1	5
83.	2	3	2	6	2	1	2	15	0	4	18	11	287		0	17	$11\frac{6}{12}$	5	16	$10\frac{6}{12}$	3	7	9
84	3	2	2	7	1	1	2	15	6	5	13	$9\frac{9}{12}$	548		1	14	3	7	8	$0\frac{9}{12}$	6	2	8
85	3	1	1	6	2	1	3	12	6	4	2	$7\frac{3}{12}$	496		1	11	0	5	13	$7\frac{3}{12}$	6	1	7
86	3	1	1	9	0	3	2	14	0	6	9	$0\frac{9}{12}$	577		1	16	$0\frac{9}{12}$	8	5	$1\frac{6}{12}$	5	2	11
87	3	2	0	8	1	3	2	13	6	5	14	$3\frac{9}{12}$	582		1	16	$4\frac{6}{12}$	7	10	$7\frac{9}{12}$	5	8	9
88	3	1	2	8	0	2	0	12	0	4	17	6	525		1	12	$9\frac{9}{12}$	6	10	$3\frac{9}{12}$	5	4	9
89	3	1	1	6	2	1	2	13	6	4	9	0	432		1	7	0	5	16	0	5	5	7
1790	3	1	2	8	1	0	3	14	8	6	1	$8\frac{9}{12}$	597		1	17	$3\frac{9}{12}$	7	19	$0\frac{6}{12}$	5	11	9
91	3	3	3	9	2	2	2	15	0	7	4	10	477		1	9	9	8	14	7	4	1	10
92	3	2	0	8	2	1	1	14	6	6	4	$4\frac{3}{12}$	504		1	11	6	7	15	$10\frac{3}{12}$	4	10	9
93	3	2	0	7	0	3	3	16	0	5	15	9	461		1	8	$9\frac{9}{12}$	7	4	$6\frac{9}{12}$	5	4	8
94	3	0	2	8	0	2	0	16	0	6	10	0	508		1	11	9	8	1	9	5	2	10
95	3	1	1	6	1	2	2	20	0	6	13	$1\frac{6}{12}$	521		1	12	$6\frac{9}{12}$	8	5	$8\frac{3}{12}$	6	9	7
Average.	3	1	2	7	1	3	2	14	$7\frac{9}{12}$	5	9	4	487		1	9	$10\frac{9}{12}$	6	19	$9\frac{1}{12}$	5	4	8

Difference between the best and the worst Seasons.

1791	3	3	3	9	2	2	2	15	0	7	4	10	477		1	9	9	8	14	7	4	1	10
1782	3	3	0	4	2	2	0	16	0	3	14	0	450		0	17	$11\frac{6}{12}$	5	2	$1\frac{6}{12}$	8	1	5

An Account of the Produce of Oats on a Farm in the County of Clackmannan, on an Average of 15 Years, from 1781 to 1795 inclusive, on an English Acre, Winchester Measure.

	Seed per E. acre.				Produce per E. acre.					Value of the Produce per E. acre.			Sheaves of Straw per E. acre.	Value of the Straw per E. acre.			Total Value of the Produce per E. acre.			
	B.	*P.*	*G.*	*Q.*	*Q.*	*B.*	*P.*	*G.*	*Q.*	*L.*	*s.*	*d.*		*L.*	*s.*	*d.*	*L.*	*s.*	*d.*	
Average.	4	1	0	0	4	5	2	0	2	4	6	$0\frac{6}{12}$	383	1	3	3	5	9	$3\frac{6}{12}$	Average.
1791	4	3	1	2	6	0	2	0	3	5	13	$11\frac{6}{12}$	375	1	3	6	6	17	$5\frac{5}{12}$	1791—Best Crop.
1782	4	2	1	3	2	7	1	0	1	2	18	$2\frac{9}{12}$	354	1	2	$1\frac{6}{12}$	4	0	$4\frac{3}{12}$	1782—Worst Crop.
Difference.	0	0	3	3	3	1	1	0	2	2	14	$8\frac{9}{12}$	21	0	1	$4\frac{6}{12}$	2	17	$1\frac{3}{12}$	Difference.

An Account of the Produce of Wheat, Barley, and Oats, on a Scots Acre; and the Average of the Three Grains, with their Yearly Value.

Years.	Produce of Wheat per S. acre.				Produce of Barley per S. acre.				Produce of Oats per S. acre.				Average of the 3 Grains per S. acre.				Average Value of the 3 grains per S. acre.				Av. quan. of Straw p. S. acre.	Average Value of 3 kinds of Straw p. S. acre				Total Value of the 3 grains per S. acre.				
	B.	*F.*	*P.*	*L.*	*B.*	*F.*	*P.*	*L.*	*B.*	*F.*	*P.*	*L.*	*B.*	*F.*	*P.*	*L.*	*L.*	*s.*	*d.*	12ths		*L.*	*s.*	*d.*	12ths	*L.*	*s.*	*d.*	12ths	
1781	10	0	2	3	7	0	0	0	6	0	3	0	7	3	0	2	5	15	10	3	438	1	3	11		6	19	9	3	
82	10	2	2	1	3	0	2	1	4	2	2	0	6	1	3	0	6	10	3	9	460	1	5	7		7	15	10	9	
83	8	2	2	2	7	3	0	2	6	2	1	2	7	2	2	3	6	15	9	3	466	1	4	8		8	0	5	3	
84	10	2	1	1	8	1	1	3	7	1	1	2	8	3	0	0	8	2	9	6	623	1	13	8	9	9	16	6	3	
85	9	1	0	0	5	2	0	1	6	2	1	3	7	1	2	0	5	9	6		528	1	8	11	9	6	18	5	9	
86	7	2	0	0	8	3	1	1	9	0	3	2	8	3	0	1	7	2	2	9	573	1	11	3		8	13	5	9	
87	8	0	3	0	7	3	2	2	8	1	3	2	8	0	3	0	6	10	9	3	574	1	11	4	9	8	2	2		
88	6	1	2	2	9	3	2	0	8	0	2	0	8	0	3	0	6	2	11	3	598	1	12	1	3	7	15	0	6	
89	9	1	1	2	6	1	2	0	6	2	1	2	7	1	3	0	6	19	6	6	513	1	7	11		8	7	5	6	
1790	10	3	1	0	7	1	3	0	8	1	0	3	8	3	1	2	8	5	0	6	634	1	14	11	6	10	0	0		
91	8	0	0	0	7	2	3	3	9	2	2	2	8	1	3	1	7	11	10	6	484	1	6	7		8	18	5	6	
92	9	0	0	0	4	3	2	0	8	2	1	1	7	1	3	3	6	13	9	3	539	1	9	4		8	3	1	3	
93	9	0	2	0	6	2	3	0	7	0	3	3	7	2	2	3	7	12	0		532	1	8	8	9	9	0	8	9	
94	9	0	1	0	5	1	1	2	8	0	2	0	7	3	0	0	7	11	4	3	558	1	11	0		9	2	4	3	
95	7	0	1	1	5	0	0	3	6	1	2	2	6	0	2	3	9	10	10	9	525	1	8	9	9	10	19	7	6	
Average.	8	3	2	0	6	3	3	1	7	1	3	2	7	3	0	1	7	2	3	9	536	1	9	3	3	8	11	7		
Difference between the Best and the Worst Seasons.																														
1790	10	3	1	0	7	1	3	0	8	1	0	3	8	3	1	2	8	5	0	6	634	1	14	11	6	10	0	0		Best Crop of Wheat.
1788	6	1	2	2	9	3	2	0	8	0	2	1	8	0	3	0	6	2	11	3	598	1	12	1	3	7	15	0	6	Worst Crop of Wheat.
Difference.	4	1	2	2	2	1	3	0	0	3	1	2	0	2	2	2	2	2	1	3	36	0	2	10	3	2	4	11	6	
1788	6	1	2	2	9	3	2	0	8	0	2	1	8	0	3	0	6	2	11	3	598	1	12	1	3	7	15	0	6	Best Crop of Barley.
1782	10	2	2	1	3	0	2	1	4	2	2	0	6	1	3	0	6	10	3	9	460	1	5	7		7	15	10	9	Worst Crop of Barley.
Difference.	4	0	3	3	6	2	3	3	3	2	0	1	1	3	0	0	0	7	4	6	138	0	6	6	3	0	0	10	3	
1791	8	0	0	0	7	2	3	3	9	2	2	2	8	1	3	1	7	11	10	6	484	1	6	7		8	18	5	6	Best Crop of Oats.
1782	10	2	2	1	3	0	2	1	4	2	2	2	6	1	3	0	6	10	3	9	460	1	5	7		7	15	10	9	Worst Crop of Oats.
Difference.	2	2	2	1	4	2	1	2	5	0	0	0	2	0	0	1	1	1	6	9	24	0	1	0		1	2	6	9	

CHAP. VII. APP. No. 2.

REMARKS ON THE UTILITY OF RAISING CORN STACKS ON PILLARS THREE FEET HIGH, WITH A PROPER *KILL-LOGIE*, OR HOLLOW SPACE IN THE CENTRE OF the STACK.

By JAMES BROWNHILL, Overseer at Shaw Park to
J. F. Erskine esq. of Mar.

IN the stack-yard at Shaw Park, there are 28 stacks, placed on cast-metal pillars 3 feet high. Each of these will contain 1584 sheaves. The circumference of the stack at the bottom being 40½ feet, it will take 52 thraves to go round the said stack. The height of the trunk of the said stack will contain 1344 sheaves, the circumference of the top of the trunk being 45 feet. The height of the top of the stack 7 feet, it will contain 240 sheaves.

The total number of sheaves in the stack 1584. The weight, 7 tons 4 cwt., should give † 26 bolls; so that the 28 stacks will contain 44,352 sheaves, or 728 bolls, or 539 quarters of barley or oats. This computation is far below what could be put upon them:—and I built on the same frame, crop 1810, 2064 sheaves in one stack, which yielded 33¾ bolls of oats; so that the 28 stacks might have contained 57,792 sheaves, the produce 945 bolls.

Let us suppose that a farmer had the same number of sheaves that grew on Shaw Park, but was obliged to build on the ground, and, probably, on a wet bottom. The farmer would undoubtedly put some little brushwood and some straw above it, before he began to build his stacks; but the damp would soon find way through them, and damage much of the straw, and even the grain would be much injured by the damp. If the farmer would but consider, that it will take 131 sheaves to form the basis of one solid stack of 40½ feet circumference, so that if the farm required 28 stacks, it would take 3688 sheaves to lay the basis of them, the straw of which sheaves would be much damaged, and perhaps full 60 bolls of oats, of one crop, reduced to half their proper value, the use of cast-iron pillars would soon be generally adopted.

By having cast-metal pillars and frames to build upon, you can with safety put in any kind of grain—say, oats in 10 days; wheat in 5; barley in 10; and beans in 8. Crop 1811, I began cutting down a field of oats that grew among the pleasure grounds of Shaw Park, on the 4th of September, and cut down the said field in 3½ days; and in 7 days I began putting them into the stack-yard, and put all of them in on the 7th, 8th, and 9th days after beginning to build, which was 7 days from the hook or sickle.

---

† 26 bolls, about equivalent to 19¼ quarters.

The said field being so much surrounded with wood, and so many green stalks amongst the crop, that I could not with safety have put the crop into solid stacks before they had been 16 or 18 days cut, I was under the necessity to try an experiment upon eight of the frames. Having a few oats exposed at the end of that bad harvest, after the oats had been more than three weeks thoroughly wet, I drove home the oats, and put the same upon the frames perfectly; and, by putting them round the killlogie, without putting a foot or knee on the sheaves, but just laying the sheaves close together, and thatching them over, the whole was preserved in good order, and thrashed as follows.

1811.				
Dec. 21.	Thrashed 3 of these small stacks—			
1812.		912 sheaves	produce	12 bolls,
Jan. 3.	Thrashed 3 others -	1240 do.	—	13
July 24.	Thrashed the 2 last -	432 do.	—	6½
		2584 sheaves	—	31½ bolls.

Crop 1812.—I went on much in the same manner; and if I had not been favoured with the frames on the pillars, there must have been more than one fourth of the corn lost. The oats were so well kept, that they would have sold to any farmer for seed oats.

There is a great advantage arising from the above stacks, that no vermin can find their way into them. The crop is often much damaged by vermin. These frames (if no ladder or sticks are allowed to remain standing up against them) completely prevent them. The first crop I put in at Shaw Park (crop 1809), there were 18 stacks to thrash after the 1st of March 1810. The whole of these stacks were cut to pieces by vermin; so that the logies of the stacks were full of oats, chaff, and cut straw from top to bottom. The height of the logies was 10 feet. I computed the loss from 50 to 60 bolls.

The height of these frames put the crop out of the way of hogs and poultry of all kinds. Some people find fault with the height of the pillars, on account of forking so much higher than usual. This is but once a year, and can make no very great difference in the work of the harvest. There are some pillars that are scarcely 18 inches high. These are far inferior to those of 3 feet: which, as they afford considerably more air than the low ones, the hogs and poultry can damage (though not nearly so much as when the stacks are built upon the ground) a considerable quantity of grain. In short, the value of the stacks erected on pillars of the height of 3 feet, (3½ or 4 feet would perhaps be still better), with the advantage of inning the grain some days, perhaps some weeks sooner, go far beyond any calculation that can be made of them.

In August 1813 there was a long frame erected for an oblong stack, in order to see whether the expense of frames on 3 feet pillars could be reduced.

The length of the stack - - -
The breadth - - - - -

The Expense.

26 cast-iron pillars, weighing 11 cwt. 16 lib. at 16s. 4d. per cwt. - - - - - . -	L. 9	2	0
(48 lib. the weight of each pillar, cost 7s. each.)			
Wood and workmanship - - - - - . -	8	19	10½
Nails - - - - - - - - - -	1	7	8
	L. 19	9	6½

N. B. The timber used was common fir and small larches.

322 thraves oats were placed on it, the weight of which was 32 tons 4 cwt.

The quantity of oats computed at 122 bolls.

This oblong stack contains much about the same as five of the 28 round stacks. But although the expense of erecting the five stack frames would somewhat exceed the expense of the oblong stack, still, I think the round stacks ought to be preferred, as they will be better defended from rain, &c. &c. and answer for taking the victual into the barn better.

An attempt was made on putting the victual immediately from the hook or sickle the day it was cut. An accident to the wood of the frame, owing to the timber being so recently cut, prevented the experiment being fairly tried; but it was sufficient to show the impropriety of it; for, though the stack did not heat, it began to grow mouldy; and therefore proved, that it required two or three days to deaden the straw. After that, though the sheaves have been exposed to rain, and perhaps not thoroughly dried, they may be ventured to be placed on the frames, as was proved by placing the single sheaves on them, crop 1811.

The Size of the last erected Round Corn Frame at Shaw Park.

The diameter, 14 feet.
Ditto of the kill-logie, 6 feet, 1 inch.
Height of the pole in the centre, 15 feet.
This frame is divided into quarters by 4 kill-logies.
The height of these, 9 feet.
Their diameter, [illegible]

CHAP. VII. No. 8.

JAMES BROWNHILL's *Account of the Weight of two Wheat Stacks, Crop 1811, one placed on Iron Pillars three Feet high, the other built on the Ground.*

		No. of Sheaves.							Weight from the Field.			Weight from the Stack.		
			Bolls.	Firl.	Pecks	Cwt.	Qrs.	Libs.	Cwt.	Qrs.	Libs.	Cwt.	Qrs.	Libs.
1811. Sept. 27.	To 1 stack built on the ground -	1644	—	—	—	—	—	—	178	1	—	151	3	21
1812. Apr. 24.	Thrashed—To weight lost in stack -	—	—	—	—	26	1	7						
	To wheat - - - - -	—	24	2	1	54	1	14						
	To shagg - - - - -	—	—	—	—	1	—	—						
	To chaff - - - - -	—	—	—	—	9	2	—						
	To straw - - - - -	—	—	—	—	86	1	12						
	To refuse - - - - -	—	—	—	—	—	2	23						
									178	1	—			
1811. Sept. 28.	To 1 stack of wheat built on cast-metal	1608	—	—	—	—	—	—	175	—	14	151	—	18
1812. Apr. 28.	Thrashed—To weight lost in the stack	—	—	—	—	23	3	14						
	To wheat - - - - -	—	24	3	3	55	3	11						
	To shagg - - - - -	—	—	—	—	—	3	23						
	To chaff - - - - -	—	—	—	—	8	1	10						
	To straw - - - - -	—	—	—	—	85	1	10						
	To refuse - - - - -	—	—	—	—	—	2	20						
									175	—	14			

	B.	*F.*	*P.*	*L.*
Stack on the ground, 1644 sheaves, gave -	24	2	1	0
Stack on the pillars, 1608 do. - -	24	3	3	0
Produce of 1644 sheaves, supposed to be built on pillars - - - - - -	25	1	3	3
Produce of ditto built on the ground -	24	2	1	0
	0	3	2	3

—So that the quantity of grain saved, by the corn being placed on the cast-iron pillars, is a little more than one lippie *p.* thrave, exclusive of the straw being much better preserved.

The weight of each pillar should not exceed one half cwt.; which, at 16s. 4d. per cwt. each pillar, is 8s. 2d.

But they can be made lighter, and can be easily afforded to be sold at 7s. each pillar.

Seven pillars at 7s. each -	L.2	9	0			
Wood and workmanship about	2	11	0			
Total expense				L.5	0	0

The wheat sold for 2*l.* 17s. per boll.

3 firlots - - -	L.2	2	9			
2 pecks - - -	0	7	1½			
3 lippies - - -	0	2	8			
				2	12	6½
				L.2	7	5½

CHAP. VII. APP. No. 4.

REMARKS ON PLOUGHING LEA:

By JAMES BROWNHILL, Overseer at Shaw Park.

OLD leas, in my opinion, should be ploughed, if possible, not above 4½ inches deep by 8½ or 9 inches broad. If the old lea be a dry soil, it will plough very well with those dimensions; and if it be ploughed deeper, it must also be ploughed broader, as the furrow will not ply close one to another, unless you have breadth in proportion to the depth. If the furrows be not plyed close, the seed will get down between the furrows, and the braird will be very unequal, and the harrows can have nothing to work upon so as to cover the seed. The strain arising upon horses in ploughing leas of this description, is mostly from the depth; but if the furrow exceeds the depth mentioned, it will act greatly against the horses' draught. I shall suppose the breadth to be 10 inches, that is, 4 inches solid in the off-side of the plough-share; and that adds greatly to the draught of the horses. The land being long sodded together, makes the furrow heavy to raise, if the plough goes beyond the proper breadth of the furrow.

Old leys, upon sour land, have always sprits in plenty. The furrow-slice, if possible, should be of the same dimensions; but the strain of draught is very different.

The strain comes now to be mostly on the sod or surface; and I am of opinion, that if the plough were not getting right below the sod, by near two inches, the horse would not go through, as the weight of the furrow assists greatly in turning the sod over. I shall suppose the sod to be stripped of this old lea 2 inches deep, and a plough going on through the sod 4½ inches by 9 inches.

CHAP. VII. APP. No. 5.

EXTRAORDINARY CROP OF WHEAT, 1806.

PARTICULARS.

IN the year 1806, Mr Abercomby of Tullibody, and Dr Moodie of Clackmannan, had two extraordinary crops of wheat. A wager was laid which was the most productive. The weight, and not the measure, was to determine the wager.

An acre of each was chosen. Mr Abercromby's had 18 bolls 2 pecks per Scotch acre, = 62 bushels 3 pecks 1 gallon 0.833 pottles per English acre;—(2 pottles make 1 gallon.)

The wheat was early lodged, which rendered the weight only 58 lib. per firlot, nearly equivalent to 56¾ lib. avoirdupois per bushel.

Dr Moodie's was not so early laid. The quantity was 17 bolls 1 firlot per Scotch acre = 55 bushels 1 peck 1 gallon 1.733 pottles per English acre.

The weight was 62 lib. avoirdupois the firlot, nearly equivalent to 61 lib. the bushel.

The weight of	17 bolls 1 firlot, at 62 lib. per firlot	4278 lib.
Ditto	18 bolls 2 pecks, at 58 lib. per firlot	4205
	Difference	73 lib.

This proves the great advantage of having weighty grain.

CHAPTER VIII.

Appendix, No. 1.

Plants in the Natural Meadows of Scotland.

Grasses.

Anthoxanthum odoratum, Sweet-scented vernal, the earliest of all the meadow grasses; and, though small in ze, it is found in every meadow which is not overburthened with oisture, and communicates a delicious flavour to hay.

Holcus lanatus, Hose-grass, or Soft-grass, the most universal of the natural meadow grasses; and grows damp and in dry soils; in rich and in poor ground. It has a ad, soft, woolly foliage, which is much relished by cattle, ei- r when green or dried. It grows early, spontaneously, and h great vigour.

Cynosurus cristatus, Crested dog's-tail, unds in all meadow ground that is not very wet. Its stems are rd and wiry, but its foliage is bulky and rich.

Poa trivialis,	Common meadow-grass.
pratensis,	Great do. do.
annua,	Dwarf poa do.
aquatica,	Water do. do.

all the richest and best of meadow grasses. The three first evail where the ground is rich, and not very wet; and the last found in marshy places.

Agrostis stolonifera,	Bent-grasses,
vulgaris,	
alba,	

ow natural in the meadows in Scotland, and contribute consi- rably to the bulk and value of the hay crop.

There are no less than 13 native species of this family, which generally known in rural language by the name of *bent* while owing among pastures; but in tillage land its roots are usual- called *squitch*, particularly those of some of the species, as ey are removed with difficulty from the soil, to which they ob- nately adhere.

This family of the grasses is principally introduced here on ac- unt of one of its species. The *agrostis stolonifera*, or black squitch, s of late excited considerable interest, and no small degree of ntention, under the name of Fiorin. This grass, new in a eat measure to agriculturists, has been chiefly brought into notice by Dr Richardson of Ireland. Its real value in husbandry still remains a subject of dispute. It is only from the clear results of accurate and dispassionately detailed experience, that it must ultimately stand, or fall, in the estimation of the public.

Festuca pratensis,	Fescue-grasses,
duriuscula,	
elatior,	
loliacea,	
fluitans,	

abound in natural meadows; some in dry, and others in moist places; and the last of them is met with in every marshy gutter.

Dactylis glomerata,	Rough Cock's-foot,
cynosuroides, or *stricta,*	Smooth Cock's-foot:

The former, which has the richest and most bulky, juicy, and valuable foliage, is often found in the best of dry meadow; and the latter on damp grounds near the sea.

The Rough Cock's-foot is likewise called orchard grass, as it thrives under the shade and drippings of large trees, and has of late been greatly recommended as a substitute for ray-grass, to which it is said to be much superior. Its leaves are large and juicy, with tall, strong, hard, and wiry stems, having large coarse seeds in clusters, on three or four short branches, which resemble the foot of a cock reversed, whence its English name is derived. It is found in abundance, and luxuriantly, in many dry-soiled situations, especially about stone walls and fences. It is rather a coarse grass, yet very productive, especially in leaves, and is not disliked by cattle, unless when it grows on rank soils. It would appear proper, therefore, that it ought to be mown for hay long before the seed ripens.

Avena pratensis, *elatior,*	Oat-grasses,
Briza media,	Cow-quakes,
Alopecurus pratensis,	Fox-tail,
geniculatus,	Knee-grass,
Phalaris arundinacea,	Reed do.
Aira aquatica,	Marsh hair do.

all grow natural in meadows, are of excellent quality, and make the best of hay. Indeed the quality of hay in every meadow, is just in proportion to the extent which one or other of these grasses bear to the other herbage.

But beside these, which are the most valuable, there are some other grasses, which, though they may augment in part the size of the hay-stack, are so coarse and unpalatable, as neither to be relished by cattle, nor nutritive as food, viz.

Aira cæspitosa, Turfy hair-grass,

a bulky grass, but so very coarse, and its stems or bents so hard and wiry, that it is of small value, except to be rotted for dung.

Carex limosa,
panicea,
cæspitosa,
rigida,
stricta,
flava,
ovalis,
pallescens,
binervis,
intermedia,
hirta,
vulpina,
ampullacea,
vesicaria,
distans,
remota,
paniculata,
pendula,
paludosa,
acuta,
riparia,

Sedge-grasses,

and others of that tribe (of which there are above fifty species), are found in the greatest part of the natural damp meadows in Scotland, and contribute more to the quantity, than to the value of the hay. The whole of the sedge grasses that have been named, may not always be found in every meadow; but there are few of any extent, in which most of them are not found. They all grow in places that are too much burdened with moisture for yielding richer and better grasses. Those towards the head of the list, grow in the driest, and those that are near the bottom, in the wettest parts of the meadow. The former are of the most diminutive, and the latter of the larger size. All of them are in the form of grasses, and most of them are eaten, though not much relished, by cattle. They are sour, coarse, and unpalatable; but they add to the size of the hay-stack, and augment the dunghill.

Triglochin palustre, Arrow-grass,
Arundo phragmites, Common reed,
Anthericum ossifragum, Asphodel,

are much of the same value as the hair and sedge-grasses.

The proportion which the grasses bear to the other herbage, in the natural meadows, varies, according to the quality of the soil, and degree of moisture under which it is kept. In some meadows, or at least in some parts of many of them, the grasses will probably amount to three-fourths of the herbage; while in others, or in some other parts of the same meadow, the proportion of grasses will fall short of one-fourth, perhaps of one-tenth of the herbage.

The other herbage, besides grasses, which grow in the natural meadows in Scotland, may be classed into that which is valuable, that which is partly so, and weeds.

Of the former, the most valuable plants are

Trifolium pratense,	Red clover,
medium,	Zigzag trefoil,
Medicago lupulina,	Yellow clover,
Vicia cracca,	Tufted vetch,
sepium,	Meadow pea,
Anthyllis vulneraria,	Kidney vetch,
Lathyrus pratensis,	Yellow vetch,
Lotus corniculatus,	Bird's-foot trefoil.

These, wherever they are found, are amongst the most valuable plants that can grow in any meadow. It must be owned, however, that most of them are but rarely met with in the damp marshy natural meadows in Scotland. The

Plantago lanceolata,	Rib-grass,

is much more common in such meadows, and is a very valuable plant, either for hay or for pasture.

Juncus articulatus,	Spritt,

is, when cut green, and well preserved, a valuable plant in the meadows of Scotland; and as it is bulky, and always green and juicy, it contributes much to the value of the hay-stack.

The following plants may be considered as a medium stage between those that are valuable, and mere weeds, viz.

Achillea millefolium,	Thousand-leaved grass,
Ranunculus repens,	Creeping crowfoot,
acris,	Acrid do.
sceleratus,	Marsh do.
aquatilis,	Water do.
lingua,	Upright spearwort,
auricomus,	Goldilock,
flammula,	Water spearwort,
ficaria,	Pilewort,
Equisetum arvense,	Paddock-pipe,
sylvaticum,	Wood horse-tail,
palustre,	Marsh do.
fluviatile,	River do.
limosum,	Smooth do.

Caltha palustris,	Marsh marigold,
Trollius europæus,	Lucken-gowans,
Daucus carota,	Wild carrot,
Leontodon taraxacum,	Dandelion,
Bellis perennis,	Daisy,
Cardamine pratensis,	Ladies' smoke,
Alchemilla vulgaris,	Ladies' mantle,
Juncus effusus,	Rushes,
conglomeratus,	
uliginosus,	
bufonius,	
Scirpus palustris,	
fluitans,	
lacustris,	
sylvaticus,	
Tormentilla officinalis,	Tormentil,
Geum rivale,	Water-avens,
Orchis mascula,	Orchides, or *baldery*.
morio,	
maculata,	

The following, and many other plants that might be named, ow in the greatest part of the natural meadows in Scotland; d as none of them are relished, and but few of them eaten by ttle, they fall to be considered as

WEEDS IN MEADOWS.

Nardus stricta,	White bent,
Juncus squarrosus,	Wire bent,
Eriophorum polystachion,	Cotton-heads,
vaginatum,	
Scabiosa succisa,	Devil's bit,
Viola palustris,	Marsh-violet,
Anemone nemorosa,	Wood anemone,
Lychnis flos-cuculi,	Ragged robin,
Valeriana officinalis,	Great valerian,
Hieracium paludosum,	Marsh hawk-weed,
Serratula arvensis,	Way thistle,
Carduus palustris,	Marsh thistle,
helenioides,	Deer's ear,
lanceolatus,	Spear thistle,
Veronica anagallis,	Speedwell,
scutellata,	
Hydrocotyle vulgaris,	White rot,
Pinguicula vulgaris,	
Montia fontana,	Water chickweed,
Alisma plantago,	Water plantain,
Drosera rotundifolia,	Red rot,
Pedicularis palustris,	Marsh louse-wort,

Galium verum,	Cheese runnet,
palustre,	
mollugo,	
Sium angustifolium, &c.	Water parsnips,
Oenanthe crocata,	Water hemlock,
Cicuta virosa,	Long-leaved water hemlock,
Angelica sylvestris,	Wild angelica,
Lythrum salicaria,	Purple loose-strife,
Spiræa ulmaria,	Meadow-sweet,
Potentilla reptans,	Creeping cinquefoil,
Mentha aquatica,	Water mint,
Ophioglossum vulgatum,	Adder's tongue,
Scirpus cæspitosus,	Deer's hair,
Senecio aquaticus,	Marsh ragwort,
Tussilago petasites,	Butter-bur,
Stellaria holostea,	Stitchwort,
nemorum,	
Iris pseudacorus,	Bog-lily,
Bunium flexuosum,	Ar-nut,
Menyanthes trifoliata,	Marsh trefoil,
Comarum palustre,	Marsh cinquefoil,
Rumex acutus,	Water dock,
Polygonum amphibium,	Willow leaved knot-grass,
Rhinanthus crista-galli,	Cock's comb, or rattle-grass,
Centaurea nigra,	Knapweed,
Geranium pratense,	Meadow crane's bill,
Achillea ptarmica,	Sneezewort,
Euphrasia officinalis,	Eyebright,
odontites,	
Scrophularia nodosa,	Figwort,
aquatica,	
Convolvulus sepium,	Hop-weed,
Polygonum bistorta,	Bistort,
Lycopus europæus,	Water horehound,
Ophrys ovata,	Tway-blade,
Eupatorium cannabinum,	Water-hemp,
Heracleum sphondylium,	Cow-parsnip.

Besides these, and many others that might be named, the yellow and marsh *fogs* grow in great abundance, in all the natural meadows in Scotland; such as, the *hypnum squarrosum, hypnum filicinum,* and *hypnum rutabulum,* where the soil is driest; and the *polytrichum commune* and *sphagnum palustre,* where wet. None of them are eaten by any species of stock.

CHAP. VIII. APP. No. 2.

ON THE NATURE OF OLD TURF.

By JOHN NAISMITH, Esq.

It is proposed to institute a candid enquiry into the nature and advantages of old turf, and to ascertain how far the assertions or arguments on either side are supported by nature and sound reason.

The substance of what has been advanced in favour of old turf is shortly stated in the Chapter on Grass Lands; and in a recent publication, (an account of the Husbandry of Scotland), the arguments on both sides have been industriously collected, and stated at large from the best authorities. * To settle this dispute, a solution of the following queries seems to be requisite.

1. Are all soils, and in all circumstances, capable of being converted into valuable old turf; or, if so converted, should it be *retained* in that state? To what extent is the surface adapted to this purpose? and what public benefit is likely to accrue, by taking all such land from the production of corn?

2. Is it the state which the soil attains, by long lying at rest, which makes the pasture of old turf more valuable? or do the roots of the perennial plants, which obtain a footing on land, while it remains at rest, send forth a greater number, or more palatable and nourishing leaves and stems, the longer they remain undisturbed in the soil?

3. What are the chief esculent plants which respectively prevail on old and new pasture? and what are the qualities of each, with regard to the nourishment of live stock?

Every experienced agriculturist, who chooses to give these queries a dispassionate examination, will be able to give a solution to satisfy himself: But it is hoped the following faint attempt will not be thought altogether impertinent.

I. Both the soil and climate of the southern part of the island, are no doubt more favourable to all vegetable productions, and probably much more of the soil in England may be well adapted to bear valuable old turf; but the proportion of the surface in Scotland, fit for that purpose, will be found not to be very considerable, at least so far as can be judged by appearance, in a country where good land, long left in grass, is not very common. The spots on which rich old turf is found, are of a friable mould, not loose and porous, but lying pretty compact, though not cohesive; of sometimes a very considerable depth, and on a permeable bottom ;* or, when the depth of soil is moderate, on a subsoil not very open, but still permeable, not unfrequently rock, full of fissures, and well stored with vegetable pabulum. These are mostly found in the plains on the sides of rivers, or among the old crofts, the favoured fields on which the culture and manure of ancient times were exclusively bestowed, and seldom elsewhere. On inferior soils, when laid in grass, after a series of a few years, the production of herbage begins to diminish. If the soil is of a dense quality, the particles, lying undisturbed, unite more closely, and the whole becomes so solid, as to resist the extension of vegetable roots. The grasses, struggling with these difficulties, appear later, and of feebler growth. If porous or sandy, the fibrous roots of the grass want a firm hold ; mosses accumulate on the surface ; and the season being far advanced before the grasses can surmount them, they are gradually enfeebled. It is only on soils, therefore, of the happiest construction, and most fertile condition, that old turf can continue productive, and on that account there is not much extent of land in Scotland, where old turf can be advantageously retained.

---

* See Appendix, No. 3, where the substance of the discussion is given from that work.

The benefit which might be expected from having much of the best soil kept in permanent pasture, would be, that a greater number of live stock would be fed on the same extent, and, it is said, to better purpose ; but the best constructed soils, that is, those which are fit for permanent pasture, are, in general, well calculated for tillage. When these are left out, more extent must be cultivated to produce the same quantity of corn : of course, this corn is dearer to the cultivator, and not more valuable to the consumer. But inferior land, by having all the culture and manure bestowed upon it, while the better land was still kept in pasture, would be gradually ameliorated, and the general fertility of the country at length augmented. It is probable, however, that the fertility of the country would be more augmented, by the best land being under alternate culture, as well as that of inferior quality. The former, in general, not only yields more corn, but more straw, by which more dung is obtained. Nor is this a time to look to the distant prospect of future fertility, while the urgent demands of a numerous population at home require all the corn at present which the country can possibly produce.

II. The species of soil which has been described as adapted to be productive of old turf, being less subject to alternate expansion and depression, than some kinds of faulty soil, undergoes less alteration when lying unstirred. It gently subsides, and, becoming more compact, excludes the summer's drought, and gives a firm hold to the fibrous roots of herbage, without obstructing their necessary extension ; and hence the pasture must improve by the soil remaining at rest. But this effect is produced in a few years. When the condensation proceeds till the ground becomes too solid, the pasture is injured, and not improved, by longer continuance. There are also other causes by which pasture is more injured, the longer it continues in that state. The operations of moles and ants disturb the roots, smother the growth, and deform the surface; and these last multiply the more, the longer the ground is left at rest. There are other legions of enemies less conspicuous, but not less formidable, by which old turf is generally infested. Some part of the herbage is rejected by pasturing animals, and even some parts of the most palatable plants left. These, with excrements dropped, form a layer of putrefying matter on the surface, which various species of winged insects find a proper nidus for the lodgement of their spawn. Enjoying, here, undisturbed repose, they multiply in incredible numbers; and while in the caterpillar state, in which one of the most formidable, the wire-worm, continues some years, are extremely voracious, and have no other food than the roots and leaves of the herbage of the field. There is yet a more minute species of vermin lodging in old pastures, which, if not injurious to the herbage, are greatly so to the animals which feed on it. These are very small insects, bred in the vegetable and animal spoils accumulated on the surface of rich land that has lain long in pasture, which find their way into the hoofs of pasturing animals, particularly sheep, and live and gnaw there, till they cripple the poor animals, and disable them from walking to gather their food.[*] These circumstances are certainly hostile to the idea of retaining land, calculated for tillage, in permanent pasture.

---

* This kind of soil would answer well for the production of lucerne, which would be much more valuable than any old turf.

While the roots of the herbage on old pasture are liable to so many injuries, judging from analogy of the process of vegetation in other cases, it does not appear probable, that the growth of grass should be quicker, or more bulky, as the ground lay longer at rest, but rather the contrary. One thing is generally observed, that the growth of grass, in the spring, appears later on old than new pastures, when the soil is similar. As to the nourishing quality of old grasses, it is easily to be admitted, that the same plants, growing on the same ground, will put forth a growth, this year, intrinsically more nourishing than the last.[†]

---

[*] About the year 1790, some fine lands were possest by Mr Wallace, a large dealer in sheep, on condition of being pastured solely by that animal. The sheep throve, and he succeeded very well for several years: but at length, after a body of decayed herbage and droppings of the sheep had accumulated on the surface, the sheep brought upon the pasture were infected with the foot-rot to such a degree that they could not go about to gather their food; and the possessor was obliged to solicit to get free of a bargain which he had before found very beneficial.

[†] The great produce of old turf lands in England, is easily accounted for. These lands were the demesnes of the great feudal proprietors, and consequently the best, or among the best in the kingdom. They have likewise been often

III. When arable land is intended to be laid in grass, it is a rule with all good farmers, that it shall be carefully freed from all kinds of weeds. The plants, therefore, which occupy well cultivated new pasture, are those only of which the seeds have been purposely sown. New grass, indeed, is seldom altogether free of weeds, even in the best cultivated land; but as no estimate of these can be made, it will be needless to notice them. Some of the native grasses, likewise, are so universally distributed, that they insinuate themselves every where, and are found among the artificial plants in new grass; but the most of these are also found on old turf. Hence, the only plants to be considered are those commonly known by the general name of Artificial grass. These are,

White clover (*trifolium repens*). This is a very generally diffused native plant; is universally admitted to be an excellent ingredient in pasture, and grateful to every kind of live stock. It does not rise early in the season, and flowers only about the beginning of July, spreading and putting forth abundance of leaves from that time, as long as vegetation lasts. It is not different in its cultivated, from its native state, except as it is treated. Its natural disposition is to stretch its stems over the surface, resting on the ground at every knee, and thence putting out branches and leaves. By too thick sowing, it is forced to take an upright direction, contrary to its nature; hence it has fewer branches and leaves, and is easily eradicated.

Great red clover (*trifolium rubrum sativum*). The leaves of this plant appear sooner in the spring than the last, and are much more bulky. It flowers in June; and, though highly valuable and productive for cutting, is less so for pasture, when the growth of its stems and leaves is checked by perpetual cropping. After continuing on the same ground for two or three years, most part of the plants perish.

Hop-trefoil (*trifolium agrarium*), is frequently sown along with the above; and, where it succeeds, contributes greatly to enlarge the bulk of the crop. It flowers early, and is more productive for cutting than pasture.

Rye-grass, or ray-grass (*lolium rubrum perenne*), is, in Scotland, a constant ingredient of artificial grass. It puts up its first leaves early in the spring, and is one of the first plants which clothe the fields with verdure. It flowers about the beginning of June. If it be eaten down before that time, it puts forth many radical leaves, and continues thus to vegetate for the greatest part of the season; but it is of more importance for early, than for late pasture.

---

top-dressed, probably, during the two last centuries; and those dressings were at the expense of the arable lands, unless where they consisted of calcareous matter, pond mud, &c.

Ribwort, or narrow-leafed plantain (*plantago lanceolata*), is frequently sown on ground intended for pasture, and has been extolled as very nutritive; but the bulk of its production is very moderate. It is much relished by sheep, and horses like it; but cows are not fond of this plant. It flowers about the beginning of July; after which it puts forth very few radical leaves. Its stem, being hard and sapless, is rejected.—These being the plants usually cultivated for grass, cultivated pasture may be considered as consisting chiefly of them.

In judging of the comparative value of old and new pastures, it seems only to be requisite to take under consideration those indigenous plants which, being found prevalent in all good old pastures, must be those which chiefly constitute the value of such pasture, without mentioning a number of smaller plants of dubious import, or others which are found in some places, and not in others. These shall be stated according to the time of their appearances.

Sweet-smelling vernal grass (*anthoxanthum odoratum*). This plant is very generally diffused; it flowers about the end of May, and continues to put forth radical leaves so long as vegetation lasts. Its seed stem is slender, and the spike short, and not very prolific. Hence it is, perhaps, that it does not make such a large proportion in old pastures as its numerous broad leaves promise.

The *lolium perenne* (rye-grass), in its untutored state, varies much in its habits from the same grass when sown. Its seed stalk is commonly shorter, and its radical leaves more numerous. It abounds on way-sides, and every where when the soil is good, and makes a considerable proportion of all rich old pastures. From the first appearance of spring, to the end of autumn, it continues to put forth leaves. In Scotland it rarely flowers till June.

Fox-tail meadow grass (*alopecurus pratensis*), is much esteemed for hay, and flowers nearly as early as either of the preceding, but has fewer radical leaves. Its seeds are frequently abortive, or eaten by insects, which, perhaps, may be the cause of its not being found so abundant as some others.

Common meadow grass (*poa trivialis*, *rough-stalked poa*, *poa pratensis*, *great poa*). These valuable grasses are very generally diffused, their panicles being very prolific, and their seeds small. Their leaves are likewise forward in the spring, (being often cut in the meadows about Edinburgh, in the end of April, or beginning of May, for soiling), and are also abundant in the latter part of the season. They flower in June, and constitute a very considerable part of all good old pastures, but are abundant only where the soil is fertile.

Soft meadow grass (*holcus lanatus*), is found in all situations, and every variety of soil. It flowers about the end of June; and its panicles being very prolific, and its seeds light, adhering to a feathery glume, are universally dispersed by the winds. It is therefore prevalent every where, on good pastures, as well as those of inferior quality; but it does not contribute so much to the value of good pasture. In places where its growth is not circumscribed by that of other plants, it rises in unsightly tufts, which, though not altogether rejected by pasturing animals, are less relished than a number of others. But this inferiority is overcome by the abundance of more palatable grasses, with which it is mixed in rich pastures.

These are the most conspicuous of the gramina found on the best old pastures. Some others appear, which, though they have been extolled, are of a more doubtful character. Cock's-foot grass (*dactylis glomerata*), has been much recommended as an excellent grass, more especially when it is eaten young, and kept down by sheep: it will then maintain a considerable quantity of that species of stock, and perhaps of young cattle. The *festuca* genus have also been much recommended; but, with the exception of the *elatior*, there are perhaps none of them of much value. *Festuca* (sheep fescue), so called from its supposed excellence as sheep pasture, is not eaten by sheep when other herbage is within their reach. When it obtains a footing in pastures, it spreads and mats over the surface, and takes the place of better plants.

White clover is prevalent in all rich old pastures; and, though the plants may not perhaps be so regularly distributed over the whole surface as on cultivated fields, yet where the seeds have been sown, and allowed to follow their natural propensity, they are probably not less productive on the former, than on the latter. There are some other valuable plants of the *diadelphia* class, frequently found on old pasture; but as none of them possess any known superiority to the plants of the same class sown on cultivated land, the value of the one will exactly balance that of the other.

Both new and old pastures being thus analyzed, some judgment might be formed in what respect the nutritive quality of the latter exceeded that of the former, if there were any standard by which the exact nourishing quality of any species of herbage could be measured. This not having yet been discovered, there appears to be no other criterion, but by the bulk of the growth, the quickness of the reproduction, and the palatableness of the plants to the greatest proportion of live stock. In none of these respects does it appear that the artificial grasses, recently sown on cultivated ground, are inferior to the herbage which usually covers old turf. The cultivated plants are naturally more bulky than the plants which compose old turf. Though no experiment has been made to compare the weight of an acre of each, it is believed, that if the whole growth of a season, on an acre of the best old turf, were preserved, it would not nearly come up to the weight of clover and rye-grass produced on the same extent of land.* The quickness of reproduction must certainly be greater, on land which has been stirred by culture, than on that which is greatly consolidated by long rest and pasturage. In palatableness, artificial grass is equal to the best indigenous herbage, to the taste of all kinds of live stock.—If, after this calm investigation, the boasted superiority of old turf should be found so doubtful, to what purpose should any of the best land in Scotland, be taken from the production of corn, and condemned to perennial pasture? or why is so great an extent of the most fertile land in England, to be kept always in that state? The epicure perhaps will say, that the beasts fed on old turf have more fat, more delicate flesh, and richer juice. But though this may be an argument in favour of old turf, to satisfy the luxurious, it will not be admitted by the landholder, the agriculturist and the statesman, while the land can be brought to yield a greater rent, while cultivation can make it more productive, and while the necessity of more corn to feed the nation, is so urgent.

It may be proper to add, that pasture lands, being exempted from tythes in England, is a strong inducement to retain them in that state, which does not exist in Scotland, where no tythes are exacted from any description of land. Were the occupiers of the soil in Scotland subject to tythes, they would likewise be glad to evade so heavy a burden, by converting even their best lands into permanent pasture.

CHAP. VIII. APP. No. 3.

The Question respecting the Utility of keeping Land in Old Turf, or Permanent Pasture, ILLUSTRATED AND DISCUSSED.

Extracted from the Right Hon. Sir John Sinclair Baronet's Treatise on the Husbandry of Scotland.

Sir John Sinclair, after premising that there is no particular, in which the systems of husbandry adopted in Scotland and England, differ more, than in regard to what is called old turf, or permanent pasture—a point which he considers as of great moment to the farming interest, proceeds to discuss the question in a distinct manner. He states, 1. The observations transmitted to him in favour of old turf; 2. Those which have been urged against it; and, lastly, draws a practical result from both: to which he adds some excellent observations on the breaking up of old grass, and the laying down of land for pastures.

---

* The quality, however, of the herbage of old turf, it is contended, is superior. Large cattle, it is said, cannot be fed on new grasses after July; and it is also beyond a doubt, that sheep of the very same flock, and divided into two parcels, as nearly equal as possible in point of size, will gain 2 lib. per quarter of more mutton, when fed on old pasture, than on luxuriant new grasses, and will yield a greater quantity of tallow.

SIR JOHN first presents the observations of Mr ROBERTSON of Ladykirk, a most respectable country gentleman in Berwickshire; and these are entitled to much attention.

Mr ROBERTSON ably maintains the advantages to be derived from permanent pasture. He contends, that it is of the utmost importance to have some old grass or meadow land attached to every farm, even where the plough is the principal object of attention: where the finer sorts of sheep are bred, as the Leicestershire, it is absolutely necessary; but, even in farms strictly arable, it will be found in the highest degree advantageous. The reason is obvious. Where artificial grasses, as clover, are alone relied on for feeding the stock of the farm, in dry seasons the farmer may be almost entirely deprived of that resource; old grass would in that case be of infinite value, from the superior nutriment which, when properly kept, it always furnishes. The land should have a sound bottom, and be rather of a moist and loamy quality: it should never be cut for hay, but always pastured: it should not be top-dressed, so as to deprive the land under crop of any part of the manure produced: the land should also be situated near the farm-house and offices; and may be in the proportion of about eight acres in a hundred. It is of great consequence to landlords, to preserve such an extent of old meadow on every farm, untouched by the plough.

MR ROBERTSON is also of opinion, that, when grass land, from age or other circumstances, gets into that state commonly called rich meadow or grazing land, it should not be opened, *almost* on any account. It would, he thinks, be much for the advantage of every farm in Great Britain, were a field of that sort attached to it.

In the last place, MR ROBERTSON states that rich old grass or meadow land, is of infinite value as pasture to stock-ewes in winter, and upon which turnips can be given them in spring, previous to their lambing. He thinks old pasture of the greatest consequence to sheep of all kinds in midsummer, especially in extreme dry weather, when the grass on the convertible lands is burnt up. To cattle and horses, at that season, and in that kind of weather, it is a matter of the first necessity. Sheep do pretty well; but the others cannot thrive without green food, in the manner of soiling, or old rich turf. Nothing is so destructive to the feet of horses as confinement on a hard field of new grass at midsummer. The same thing may be said of cattle of all sorts. Even the richest of land, when sown down, does not come to real perfection in less than thirty years; and after that period, if properly managed, it may be said to be in a progressive state of improvement; so that it may be a matter of serious consideration for any landlord to allow such land to be opened, if he has a just proportion of it on his property. If he has more than that, he may securely reckon on it as a good fund to raise money, by a proper rotation of tillage.

MR LOW, of Woodend, observes, that the value of a portion of old grass is not to be considered intrinsically, but in relation to the farm, of which it forms a part. Calculations concerning the comparative profits of land in tillage, and permanent pasture, he considers therefore as of no value in the argument; since it is not contended that land in old pasture is of greater, or equal, value with the same sort of land under tillage; but that it is convenient and profitable to have a small portion of a farm so occupied: in short, that it is not the value of the grass itself, but the greater value it gives to the rest of the farm, by its many important uses, that is to be considered.

MR LOGAN, of Fishwick, who carried on farming to a great extent, (occupying at one time about 2000 acres of land of various qualities, one half of which he kept always in grass, and the other half in tillage), concurs in these doctrines. When he set the farm of Fishwick to Mr John Clay, he would not suffer one particular field to be ploughed up, which had been in grass above fifty years, and which, when properly treated, produces such a great variety and abundance of rich herbage, as soon brings the fattening stock to great perfection. He has also an old grass field at Edrom, where he resides, which has been 100 years in grass, and is supposed never to have been formerly limed: It is a rich black loam, on a gravelly bottom: He top-dressed it with lime in the months of November and December, and had turnips laid on it for his feeding sheep afterwards: It made a most astonishing improvement, both in quality and quantity of food; the grass was darker in its colour, smaller in the pile, and more luxuriant in its growth.

MR LOGAN considers it to be a great advantage, to top-dress old grass lands with a compost of earth or moss, lime and dung, properly prepared. The proper time for laying on the compost, is in the beginning of winter, the field being previously eaten very close in the autumn, and left to remain till May for pasture. Old grass land that is constantly cut for hay, requires dressing, as it is annually robbed of a crop without receiving any thing in lieu of it. In counties where turnips are grown, he thinks it would be of great use to those meadow lands, to have sheep fed with turnips upon their surface in the dry weather, which would be a profitable, and not expensive top-dressing. Feeding cattle on the sward, with turnip, has not the same good effect that sheep have; cattle sink too deep in the soil with their feet.

MR WILSON, of Simprin, another intelligent Berwickshire farmer, is of opinion, that in every farm a part of it ought to be old grass, even though it should be in a dead or unproductive state. He is such an admirer of old grass, that he keeps a proportion of it on his farms, though he has the liberty of breaking it up. Land, when grass is sown for permanent pasture, ought to be laid down in the very highest order; if that is not the case, it should never be suffered to remain.

MR WILSON reckons old grass of equal value as tillage land, and equally productive for man and cattle, with the exception of lands in the neighbourhood of large towns, where there is a great command of dung.

Having had the experience of feeding a number of the best oxen in Berwickshire, MR WILSON is of opinion, that large oxen cannot be fed to advantage, after the first or middle of June, without old grass. Before that period, artificial grasses will feed equally well, with the double advantage of allowing the old grass to get up—a great acquisition in ox pastures.

As to the quantity of old grass on different farms, Mr WILSON thinks, that from 35 to 40 acres on a 300 acre farm, and from 45 to 50 acres on a 500 acre farm, and so on, is a fair proportion. The time of breaking up ought, in his opinion, to be regulated by its grazing well or ill. It is further his opinion, that if the land is laid down in the best possible order, the longer it lyes the better; or, in other words, it should lye for ever in grass. As to artificial grasses being pastured, the sward will always be too weak for large oxen, and they can never lye so comfortably on it as on old grass; besides other disadvantages, as not standing drought or wet. Nothing indeed but age, can produce that fine variety of plants, so ornamental and valuable in old pastures.

It is probable, indeed, that old turf is peculiarly advantageous for feeding, in consequence of the variety of the herbage which it produces. From that variety, the grasses must appear at different seasons: In consequence also of that variety, cattle must be tempted to eat the herbage in greater quantities; and it may not only be more nourishing, but also more easily digested.

MR HOPE, of Fenton, is of opinion, that it would be desireable to have a certain portion of old grass upon every arable farm. He considers the want of pasture grass, as the point on which the great bulk of Scotish farmers are most defective; and from the advantages which he has seen derived by a few of his most intelligent neighbours, from pasturing their lands, he is decidedly of opinion, that if a full third of the county of East Lothian were kept in grass, as much grain would be raised as at present, with the advantage of all the additional stock that would be maintained upon such an extended pasturage. He desires to be understood as meaning, that this grass should form a part of the farm under the convertible system, not permanent pasture, which he looks upon as little better than the present system, where pasturage is too little attended to. Here it may be remarked, that Mr Hope does not contend in favour of permanent pasture, but merely for keeping land a few years in grass—a point upon which there is no dispute.

On the other hand, SIR JOHN SINCLAIR observes, p. 75, that the advantage of permanent pasture is denied by many of the most intelligent agriculturists of Scotland. MR RENNIE of Phantassie, a gentleman farmer of great knowledge and experience, contends that none is requisite; and that whatever proportion of it is kept, occasions a lôss of rent to the proprietor equal to 25 per cent., besides the injury sustained by the farmer and the public. Though artificial grasses, he observes, may not produce milk, butter, cheese, beef and mutton, of so rich a quality as old pasture, he is satisfied they will produce a larger quantity: the best proof of which is, that artificial grasses upon land of equal quality, condition, and situation, always let in East Lothian at a far higher rent than old pasture upon similar soils. The great advantage of artificial grass is, that it produces food for stock at least one month earlier than old pasture, by which the stock upon it get such a start, that they keep their superiority throughout the whole season; and it is chiefly by stock fed in this way, that the early markets are supplied. As to feeding large oxen on old grass, he has had no practice, though he has fed cattle, from thirty to forty stones Dutch, upon artificial grass. Indeed, full three-fourths of the cattle fed in East Lothian are fattened on pasture of this kind; and he knows that cattle so fed, will come one month sooner to market than those of equal weight and condition from old pastures. Artificial grass is also preferable for early ewes and lambs, sick horses, &c.; nor does he think it more liable to suffer from dry weather on similar soils, if properly managed. On these accounts, there is not, in his opinion, the smallest necessity for old grass; neither is it practised in East Lothian: Perhaps in a few cases, where there happens to be some hilly or rocky land, it may be for the interest of the tenant to let it lye in permanent pasture, but not otherwise.

MR BROWN, of Markle, after adhering to the statement of MR RENNIE, observes, that the difference of value betwixt *turf land*, and land kept under convertible husbandry, must vary much, according to soils and local circumstances; but in such a farm as the one in his possession, he would not have the slightest hesitation of giving 1*l.* per Scots acre more for land, if freedom of management were allowed, than he would, were the landlord to say, You must keep it constantly under grass. He farther adds, that he would make the like difference upon the number of acres proposed to be kept exclusively in grass, whether the number was limited to one half, one fourth, or one eighth of the farm in his possession.

Mr BROWN, considering the question as meant to elucidate the superiority of convertible husbandry, further observes, that it is not an easy matter to calculate the difference of produce in 21 years, where land is kept under permanent pasture, instead of being broken up: for it is not only the loss upon the turf land, but likewise the indirect loss sustained by the arable land, in consequence of not being managed in the most proper manner, which must be held in view, when that difference is taken into consideration. So far as the question is limited to the quantity of land kept in turf, he would answer, generally, that the public loses three firlots of grain for every stone of beef or mutton that is obtained, by feeding cattle or sheep upon that turf.

Now, under the supposition that equal quantities of wheat, barley, oats, and beans, were cultivated, these three firlots would, according to Winchester measure, be somewhat more than three bushels and three-fourths of a bushel; and their value, at the round average of 50s. per quarter, would be about 1*l.* 3s. 6d.; from which sum falls to be deducted 11s., the estimated value of seed and labour for raising that quantity of grain, leaving a balance of 12s. 6d. as an offset against the value of each stone of beef or mutton obtained by feeding cattle or sheep upon the old turf land. On the other hand, MR BROWN estimates 12 stone of beef or mutton to be a full average of the annual produce per acre from old turf, (in a few cases it may be more, but in many others it is less); and as he considers half a guinea per stone, avoirdupois weight, to be a higher price for beef or mutton than 50s. per quarter is for grain of all sorts, it follows from these calculations, that 1*l.* 4s. Sterling per acre is annually lost by adhering to the system of keeping land exclusively in old turf, independent of the manifest injury done to the old tillage land, from the necessity thereby occasioned of persisting, in consequence thereof, in a similar exclusive system of management. But, taking the question in another point of view, the result is similar. Supposing five quarters of all grain to be the average of arable crops, and every man who knows the old turfs of England will allow that a low average is taken, the value thereof, at 50s. per quarter, is 12*l.* 10s. Deduct from that sum 5*l.* Sterling, the estimated value of seed and labour, and 6*l.* 6s. the value of beef or mutton produced from an acre of turf, there remains a balance of 1*l.* 4s. Sterling in favour of convertible husbandry. MR BROWN, however, does not contend for constant tillage. He only advocates the cause of alternate husbandry, considering that system to be the best one for promoting the interest of the proprietor, the tenant, and the public.

Artificial grasses, MR BROWN adds, will certainly feed oxen of any weight during the period of their growth. and answer equally well for dairy purposes. No doubt there is a period of the year when artificial grasses will not feed; say from the middle of July to the middle of August; but if the farmer reserves a fresh bite of older grass, till the season furnishes a second supply of clovers, the feeding process will not be impeded in the slightest manner. This fresh bite may be obtained from a field of four years old grass, as well as from a field which has remained in grass for ten times that period.

It is admitted, that a field of perennial grass is beneficial on every farm; though the advantages of such a field, for breeding ewes in spring, are rather problematical, unless it is regarded as a place for giving turnips to the ewes. In fact, upon all well-managed farms, where stock and corn husbandry are conjoined, turnips are the chief food given to ewes in February and March; after which, a supply of grass is generally obtained.

The extent of perennial pasture (not old turf) necessary in a farm of 500 acres, must differ in almost every different situation. In Mr BROWN's case, 60 acres answer very well, though in many others a greater quantity may be necessary. But this grass, with the exception of a field unfit for ploughing, is regularly broken up by the plough when four years of age, to the great benefit of the rest of the farm; yielding, then, heavy crops of corn, and requiring little manure for several years.

Mr HUME, of East Barns, and Mr HUNTER, of Tynefield, concur in these observations. They state, that one acre of sown grass, will not only in general afford as much keep the first year, as can be procured from it in the two following ones, but it also comes much earlier in spring; which is a matter of great importance to the welfare of live stock, particularly of sheep. The oat crop, likewise, is not meliorated by the land remaining longer than one year in grass,—an opinion generally entertained, unless in cases where the ground remains longer in grass than is consistent with the length of modern leases.

Mr HOOD, a most intelligent farmer near Kelso, remarks, that people will think very differently upon the subject of old turf; and before any satisfactory answer can be given, the age of the grass, size of the farm, and the nature of the soil, should be stated; for, upon a small farm, old grass is neither necessary, nor profitable. Upon a large farm, a small proportion of old grass *may be very convenient*. Upon the whole, however, he does not think it is either necessary, or for the advantage of a farmer, upon a lease of 21 years, to keep any part of his land in old grass; nor is he convinced that it would be for his interest to do so, even upon a lease of longer endurance. The generality of soils, if properly laid down, will produce more grass the first year, than they will do in any subsequent one, for ten years at least. He has a field of originally good land, which has been pastured for 30 years; and he is satisfied, that it neither produces more grass, nor feeds better than it did 15 years ago: therefore, he can see no advantage to a tenant, by allowing any part of his farm to remain so long in grass. His opinion regarding old turf, he adds, may appear singular in some districts; but it is founded upon experience.

Dr COVENTRY is also of opinion, that inferior lands should not remain long under pasture. Light, open, sandy, or gravelly soils, or lands full of vegetable mould, may be kept in grass longer than the poorer clayey grounds; and very light lands may, for a time, even improve when under grass: But in the course of three, four, or more years, in consequence of the clay soil sinking down, and becoming over close and cohesive, the commonly cultivated herbage plants (clover and ray-grass) depart, and the native plants slowly form a sward, which is often, in poor soils, of a bad species, and never of much value.—If these lands were once put into good condition, and well laid down to grass, they might remain perhaps four or five years in pasture without disadvantage; but, even then, a longer period might increase their tenacity, and bring back all the evils arising from over-closeness of texture, producing over-wetness and infertility.

Mr WALKER, of Mellendean, is confident, that no farmer in Roxburghshire, upon a 19 or 21 years' lease, can lay down land to remain permanently in grass, without being a loser thereby to a very considerable extent. He does not know what might have been the difference in the weight of his old cattle, had they been fed upon such pastures; but after working them till the month of August, and continuing them on pastures of one and two years old, while there was grass in the fields, he has sometimes sold them in the spring following, at the weight of 120 stones English; and his wethers and draft ewes generally average about 20 lib. English per quarter.

Mr JOHN SHIRREFF refutes several of the arguments used in favour of old turf in the most satisfactory manner. He states, that new pastures are much fitter for sheep than old; because they are much earlier in spring, and much more vivid and fresh during the winter months. It is admitted, he observes, by some of the most strenuous advocates for old turf, that clover and ray-grass has at least a fortnight's start of old pasture in spring; though it will often actually have near a month's, on similar soil, in the same situation, whether both have been eaten, or both saved, during the preceding winter, unless the clover has been eaten so much as to injure the plants. This start, he observes, is a circumstance of the greatest moment, as the salvation or destruction of a flock may depend on a few days' keep, instead of a fortnight's, at that critical season of the year, the spring months. In regard to the cattle fed on old turf, he maintains, that very large oxen are but unprofitable stock, in most situations, and always easier and cheaper fed at the stall than in the pasture field: also, that it is contrary to a farmer's interest, either to breed, or feed, cattle so heavy, that they cannot pasture at their ease on any land but the soft carpet of an old turf field. As to giving turnip to stock-ewes in spring, previous to dropping their lambs, he contends, that pasture of two years' standing, or even what has been pastured for one season only, namely, the year immediately preceding, will equally well answer that purpose as old turf will. Moreover, that drawing turnip, and giving them to sheep, or any other stock on old turf, *never broken up*, as recommended by the friends to that system, is cheating the rest of a farm of manure, and occasions a heavy loss, as this old turf does not carry grain crops, turnips, &c. to the extent it would do if under convertible husbandry, and so return its due proportion of manure to the other fields of the farm, while it allowed them to be refreshed with pasture in their turn.

As to the objection, that in seasons extremely dry, the grass on convertible land is burnt up, he alleges, that if land be well prepared, and laid down with plenty of good seed, particularly white clover, and be not too hard stocked, that is, too close eaten down early in the season, clover and ray-grass will bear nearly as much drought on the same, or similar land, as turf will; at least he ventures to think, that when a field of good clover and ray-grass is burnt up, old turf, on similar soil, will at least be singed. In an extremity, some oats or barley might be cut green, to carry on stock till rain restored vegetation. And he thinks a very small sacrifice of this sort would bring good clover and ray-grass to *the par* of old turf, on the only occasion on which they do not rank above it in this country, for any really useful, profitable, known purpose, to which either species of produce can perhaps be applied.

In regard to the variety of grasses in old turf, Mr SHIRREFF observes, that this mixture is a palpable loss. There is, thus, a quantity of the rotten herbage of noxious and rejected plants always mingled with the fresh and edible, which certainly can neither be so palatable, safe and nutritive to the stock, or so economical in consumption, as when a few plants only are cultivated, which are *known* to be grateful, salubrious, and nourishing to the animals intended to consume them, and which consequently make no waste in doing so. And this is perhaps the reason that new pastures are in general more equally eaten than old. Where noxious or rejected plants abound, the herbage is generally rank, and little touched, while particular parts of the field, free of this trash, are eaten to the bone.

Mr SHIRREFF adds, that there are few, if any, of the plants which constitute the cultivated herbage of the Scotish husbandry, which do not spring again immediately, and vigorously, as soon as cut or cropped over, provided they be not allowed to run to, or towards, full bloom, or, which is still worse, to form seeds. The case is different with many of the plants in old turf, several of which are puny, and also slow of growth. Some have a short paroxysm, as the *cynosurus cristatus*, which, when the stem and panicle withers, stands an unsightly object the whole autumn, and even winter after; and, being as tough as wire, must annoy the cattle in touching the fresh herbage with which it is mixed.

Many plants, which are found in all old turf, are rejected by cattle, sheep, and horses; as the common daisy (*bellis perennis*), common crow-foot (*ranunculus repens*), &c.: This last, indeed, when in seed, is so pungent, that were any considerable quantity of it taken into the stomach of an animal, violent inflammation and death would inevitably follow; and, probably, many cows, that are said to be witched, or die of the wood-ill, &c. may suffer from this very plant. Old turf is also full of various *fungi* or mushrooms, many of which are deleterious; and some of them, when taken into the stomachs of animals, the most deadly vegetable poisons in nature.

Ragwort (*senecio jacobæa*), is *only* eaten *by sheep* when it is very young. This is a plant that covers many old turf fields. The meadow-sweet (*ulmaria*) is a beautiful, fragrant plant, common in old meadows, if inclined to peat: But horses and cows reject it;—sheep will eat it.

On the whole, Mr Shirreff is satisfied, from experience and observation, that, admitting always that the soil and climate is nearly the same, a field of clover and ray-grass, well laid down, will, on the average of the two first years, keep, or feed, more stock, than one of old turf, of the same extent, will do, in the same years; and as the flush of herbage of the clover, &c. will be much earlier, as well as greater, more profit must be derived from its consumption.

One of the principal diſadvantages of old graſs lands kept for hay, and occaſionally paſtured, is, the quantity of manure that is waſted in top-dreſſing them. There can hardly be a queſtion, that dung ſhould be covered with earth, ſo as to derive the full benefit from it. How abſurd, then, muſt not the practice be, of laying ſuch quantities of rotten dung on the ſurface of graſs land, ſo frequently the caſe in England! Dr Coventry moſt juſtly condemns this practice as the bane of good huſbandry. He obſerves, that there muſt always be great waſte, wherever putreſcent manure is ſpread on the ſurface, inſtead of being covered in by a portion of the ſoil. In the decompoſition of putreſcent matter, every one muſt be ſenſible of the aſcent of a part of the materials. Animal and vegetable ſubſtances, if expoſed to the atmoſphere in a putreſying ſtate, will almoſt entirely diſappear. The loſs may be greater or leſs in different caſes; but every hour the manure lyes ſpread on the ſurface of the ground, it muſt of neceſſity ſuffer waſte. On the contrary, if ploughed in, towards the end of a ſummer-fallow, or with a horſe-hoed crop, it will be moſt effectually blended with, and covered in by the ſoil; and all that eſſential part which, becoming volatile, is diſſipated into the atmoſphere, will be retained for the nutriment of the after crops.

It may be obſerved, as an additional proof in favour of the convertible ſyſtem, that though, in Eaſt-Lothian, there is hardly any portion of natural graſs, yet, as Mr Curwen remarks, the rents paid in that county are higher than in any part of Great Britain, and have been progreſſively increaſing ever ſince that ſyſtem was eſtabliſhed. Hitherto, therefore, no deterioration of the ſoil has been felt; which, after ſuch a period, may fairly be taken as concluſive, that the ſoil ſo managed will yield at all times with equal productiveneſs.

Being anxious to bring this important ſubject to the teſt of calculation, Sir John Sinclair prevailed upon ſome of his farming correſpondents to direct their attention to this mode of inveſtigation. And Mr Thomson of Bewlie, in Roxburghſhire, having ſtated it as his opinion, that though old graſs, if let at a moderate rent, might be of ſome advantage, yet that no farmer could afford to pay as much rent for land in graſs, as he could do under the alternate huſbandry of white and green crops; Sir John was thence induced to inquire, what would be the fair difference of rent, if one eighth part of a farm of 500 acres were kept in permanent paſture, compared to the rent that could be paid for the reſt of the farm. Mr Thomson's anſwer is—" I think that the rent ought to be one-third leſs per acre than the reſt of the farm." According to this doctrine, if a farm of 500 acres was worth 2*l.* per acre, one-eighth part thereof, or 62½ acres, would only be worth 1*l.* 6s. 8d. per acre; the difference, 13s. 4d. per acre, would amount, on 62½ acres, to 41*l.* 13s. 4d.; which, on a leaſe of twenty-one years, would be a loſs to the landlord of 875*l.*, beſides periodical intereſt.

Mr Brown, of Markle, ſome of whoſe calculations regarding the profits of convertible huſbandry upon ſoils ſuch as thoſe of his own farm (which are chiefly of a clayey nature) have been already noticed, has alſo favoured me with his ſentiments upon the ſame ſubject, as applicable to ſoils naturally qualified for carrying turnips. According to the view he has taken of the queſtion, it appears, that if old graſs land, of a kind calculated for carrying turnips, were broken up, the quantity of ſtock which might be fed upon the turnips and clover raiſed during a ſix-courſe ſhift, of turnips, barley, clover, oats, beans and wheat, would not be much leſs than what is at preſent fed upon theſe lands during the whole ſix years they are excluſively devoted to paſture.

Theſe doctrines are amply confirmed by the calculations of Mr Murray of Kirklandhill. According to that gentleman, the following is the produce of lands in cultivation, compared with lands in permanent paſture.

100 acres in fallow and wheat, value - -	L. 1000	0	0
100 acres in oats and clover - - -	1125	0	0
100 acres in beans and wheat - - -	1500	0	0
Divide by 3)	3625	0	0
Average produce per 100 acres - - -	1208	6	8
100 acres in permanent paſture - - -	350	0	0
Difference in value of produce per 100 acres	L. 858	6	8
Loſs in produce per acre, per annum - -	L. 8	12	6

by retaining 100 acres, or one-fourth of the farm, in permanent paſture, inſtead of cultivating it as convertible land.

From the above, the expenſes of cultivation muſt be deducted; therefore, allowing one half of the above difference to defray theſe expenſes, the loſs ariſing from a neglect of convertible huſbandry would be 4*l.* 6s. 3d. per Scotiſh acre, or 3*l.* 9s. per Engliſh acre.

The queſtion is ſummed up by SIR JOHN SINCLAIR in a conciſe and perſcipuous manner. He ſays,

“ I do not recollect any agricultural ſubject, where the arguments on both ſides are more fully ſtated, than in the preceding extracts from the communications of ſo many intelligent correſpondents; and it is with great diffidence that I venture to ſubmit to the reader's conſideration what ſeems to me the reſult of the whole inveſtigation.

“ 1. I certainly think, that it is highly deſirable to keep one or two moderate-ſized encloſures, containing from ten to twenty acres, according to the ſize of the farm, near the reſidence of the farmer, in graſs, for the feeding of cattle and ſheep; provided the ſoil is naturally calculated for it, or is thoroughly drained, and improved by manure and cultivation. The utility of this meaſure is acknowledged by almoſt every one of my numerous correſpondents; without admitting, at the ſame time, that ſuch field or fields ſhould never be broken up, or that the ſame part of the farm ſhould always remain in graſs.

“ 2. Where the finer ſort of ſheep are bred, it is contended that it is neceſſary to have ſome old turf, where the ewes may drop their lambs, and where they may be fed with turnips, or any other article in the ſpring ſeaſon. But old turf is quite unneceſſary for either of theſe purpoſes; Mr RENNIE of Phantaſſie, and Mr BROWN of Markle, having aſcertained, by experience, that on dry land, which is the only proper kind of ſoil for ewes to lamb upon, graſs of two or three years old is as good as that of twenty.

“ 3. It is likewiſe contended, that it is neceſſary to have ſome old turf, as a reſource for the ſtock to go on, in caſe of any ſpring or ſummer uncommonly dry, ſuch as happened in the year 1810, when it was a long time before the artificial graſſes made their appearance, or could be either cut or paſtured. On loams, however, artificial graſs may always be paſtured earlier than old turf, unleſs in ſeaſons when uncommon wet weather prevails; and other ſubſtitutes have been already ſuggeſted.

“ 4. Lands apt to be overflowed, or which have been converted into water meadow, it is evident, cannot be cultivated for grain crops; and there may be *ſome very rich old meadows*, which it would be deſirable to preſerve in the dairy diſtricts: But with theſe exceptions, there ſeems to be no doubt of the infinite ſuperiority of the convertible huſbandry, to the landlord, the tenant, and the public; and it can hardly be queſtioned, that there are many hundred thouſand acres in England, now in permanent paſture, which might be advantageouſly ſubjected to that ſyſtem. Old graſs lands alſo, may be broken up, and, if judiciouſly and moderately cropped, may be laid down again in graſs, without loſs. Indeed, Mr SHIRREFF obſerves, that where calcareous matter has not previouſly been applied to ſuch lands, he has no doubt that, with the aſſiſtance of that moſt powerful manure, both the quantity and quality of their herbage would be much improved.

"On the whole, it appears, that the retaining of any conſiderable portion of a farm in old turf, or permanent paſture, is, in general, injurious to the landlord, the tenant, and the public: nor can any ſyſtem be more abſurd, than the one which binds a tenant, to lay on his graſs land the greateſt proportion of the manure produced on his farm, and to reſerve but a moderate quantity for his arable land. How eaſy would it be to double the value of an eſtate, where ſuch a ſyſtem has been hitherto adopted, by appropriating the manure of the farm to turnips, and other green crops, and by the general adoption of convertible huſbandry!"

CHAP. VIII. APP. No. 4.

ACCOUNT OF THE BREAKING UP OF THE HAUGHS OF HAMILTON.

By Mr WILLIAM AITON, Strathaven.

SOME of the richest and best haugh land round Hamilton palace (Clydesdale), which had been kept in pasture for upwards of twenty years, was, about 1804, let for cropping; and after yielding four, and some of it five successive crops, without manure of any kind, these lands have been again returned to pasture. As this is the species of land that is best adapted to permanent pasture, or permanent meadow, which, if it lay in England, would likely be devoted to the one or the other of these uses; and as it was kept in old turf for upwards of twenty years prior to its being last cropped, the rents it gave in old turf, when cropped, and now in new pasture, may serve as a fair and proper criterion for judging of the propriety of breaking up such land. The following statement of facts, obligingly communicated by William Wilson esq., land-steward, at Hamilton, to the Marquis of Douglas and Clydesdale, at his Lordship's particular desire, will show that a very great increase of rent has been obtained by the noble proprietor, and that a vastly greater quantity of human food has been brought to market, by breaking up these haughs of rich old turf, than they would have yielded, had they remained in pasture during these years; and that, so far from the new pasture being worse, it brings near double the rent of the old turf.

Mr Wilson says, "The most part of the lands round Hamilton palace had been chiefly in sheep pasture for many years previous to 1804, during which time they were let at various rents. Part of the haugh grounds had been always let alongst with some higher grounds lying without the reach of the river Clyde, and rather of an inferior quality; consequently, it may be difficult to say what rent per acre these haugh grounds brought in pasture, before being ploughed up. But, from the nearest calculation I have been able to make, I think it may be stated at about 2*l.* 5s. per Scotch acre. The land was let from year to year;

sometimes by *roup*, or auction, and sometimes by private bargain. In December 1804, the haugh grounds within and adjoining the Race-course, consisting of about 123 acres, were let to several tenants for three tillage crops, to be taken in the years 1805, 1806, and 1807. About 40 acres of this field were let at 12*l*. 12*s*. per acre annually, the tenant being obliged to take a hoed crop the second year. From the inexhausted state of the grounds, these 40 acres were afterwards let for a fourth crop, to be taken in 1808, at the rate of 8*l*. per acre; and, in 1809, this field was again let for a fifth crop at 7*l*. per acre, the tenant undertaking to spring-fallow the whole, when it was sown down with grass seeds. † The remaining 83 acres were also let in lots, for tillage, in the years 1805, 1806, and 1807, at various rents, and to be put under a hoed crop the second year, excepting such parts as the proprietor intended to take into his own hands after these three years, and dress himself. The average rent of these lots was about 9*l*. per acre yearly, for these three years. The above 83 acres were let for a fourth crop, to be taken in 1808, at about 7*l*. per acre; and, in 1809, this field was mostly either spring-fallowed, or trenched by the Duke, cropped with oats and grass-seeds, and the crops sold on the foot, which brought, upon an average, from 14*l*. to 15*l*. per acre. The whole of these grounds were in hay in 1810, and yielded a very good crop; and last year they were pastured by the Duke, and might be worth 4*l*. 10s. per acre.

"The north haugh, lying between Hamilton-Burn and the New-Bridge road, consisting of about 80 acres, had been long in pasture and hay; sometimes in the proprietor's own hands, and sometimes let to a tenant. It was let in sheep pasture in 1803, the year before being ploughed up, at 260*l*., being about 3*l*. 4*s*. per acre. In February 1804, this field, with about 25 acres contained in paddocks, making, together, 105 acres, was let, in lots, for three tillage crops, to be taken in the years 1804, 1805, and 1806, at various rents; the average per acre, per annum, about 10*l*. It was also let for tillage, in 1807, in lots; the average per acre nearly 7*l*. 10s. And this field was again let for cropping in 1808, obliging the tenant to spring-fallow the whole, previous to the sowing of grass seeds; the average rent per acre about 5*l*. The above 80 acres, called the North Haugh, was let in pasture to the same tenant who possessed it before being ploughed up, for the first year's grass, with the liberty of pasturing the stubbles after the crop was carried off, at the rate of 6*l.* per acre. It has been in the proprietor's own hands these two years bypast; and may be worth 4*l.* 10s. per acre.

---

† This is said to be miserable mismanagement; but it is proper to observe, that the fertility which the haugh had acquired, by being upwards of 20 years in pasture, and often overflowed by the Clyde and Aven, was such, that it could produce, without injury, four or five crops in succession. The person who had the chief direction of these operations, assures Mr Aiton, that the fifth or last crop was so strong, that a great deal of the corn lodged, and injured the grass so much, that part of it had to be sown after the separation of the crop. If it had been trenched to keep down the weeds, this land was abundantly rich to have produced, without the aid of putrescent manure, two or three more successive crops of grain.

" South Haugh, lying to the eastward of the New Bridge road, consisting of about 54 acres, had been let in sheep pasture, alongst with others, for several years previous to 1807, at various rents. In 1806, it was let by itself at 220*l.*, which was the highest rent it ever brought, and nearly 4*l.* per acre. This field was let for three tillage crops, to be taken in 1807, 1808, and 1809, at 12*l.* 12s. per acre; and was again let for a fourth crop, in the year 1810, the tenants being obliged to spring-fallow the whole, except such parts as had been under a hoed crop in 1809: the rent was 7*l.* per acre. This field produced a very abundant crop of hay last year, and is this year let in sheep pasture at 5*l.* per acre. It may be proper to observe, here, that none of the before mentioned grounds got any manure, either before being broken up, or during the time of cropping. "

From this candid statement of facts, it is easy to see, that a very considerable profit in rent has been realized by breaking up and cropping these lands, in the manner Mr. Wilson has so accurately detailed, and which may be summed up as follows.

Total amount of rent, in pasture, of 123 acres of land, within, and adjoining to the Race-course, for six years, viz. 1805, 1806, 1807, 1808, 1809 and 1810, at the rent of 2*l.* 5s. per acre - - - - - - - -	L.1660	10	0
Total rent in grass of 80 acres, called the North Haugh, situated between Hamilton burn and the New Bridge, with 25 acres in paddocks, for six years, viz. 1804, 1805, 1806, 1807, 1808 and 1809, at the rate of 3*l.* 4s. per acre -	2016	0	0
Total rent of South Haugh, consisting of 54 acres, at the rate of 4*l.* per acre, for each of the years 1807, 1808, 1809, 1810 and 1811 - -	1080	0	0
Total rent which the whole haugh land round Hamilton palace would have given in pasture, during the whole years it was in crops of grain and hay - - - - - -	L.4756	10	0*

It is now proper to state the amount of rent actually received for these lands, during the four or five years they were in grain crops, and one year in hay, supposing the hay worth the same rent as the other crops; and much of it was of greater value.

---

* It is said this rent proves, either that the pasture was of an inferior description, or that there was but little demand for it in that part of the country. The quality of the soil, however, was rich haugh land, occasionally overflowed; and it is impossible to suppose that there was not a sufficient demand for pasture land, in the populous vale of the Clyde, so near the manufacturing town and barracks of Hamilton, and only ten miles from Glasgow.

To 40 acres at the Race-course, let for tillage, crops 1805, 1806, 1807, at 12*l.* 12s. per acre per annum - - -	L.1512	0	0			
To rent of crop 1808, at 8*l.* per acre	320	0	0			
To ditto of ditto 1809, at 7*l.* per acre	280	0	0			
To ditto of ditto in hay, say 10*l.* per acre - - -	400	0	0			
To rent obtained for the remaining 83 acres of ground at the Race-course, crops 1805, 1806 and 1807, for tillage, at 9*l.* per acre - -	2241	0	0			
To ditto of crop 1808, at 7*l.* per acre	581	0	0			
To ditto of ditto 1809, supposed -	581	0	0			
To ditto of ditto 1810, in hay, say 9*l.*	747	0	0			
Total rent of the land at the Race-course for the six years it was cropped				L.6662	0	0
Rent of North Haugh, 105 acres, for six years, during cropping and hay, viz.						
To crops 1804, 1805, 1806, at 10*l.* per acre - - -	L. 3150	0	0			
To do. 1807, at 7*l.* 10s. per acre	787	10	0			
To do. 1808, at 5*l.* per acre -	525	0	0			
To do. 1809, in pasture, at 6*l.* per acre - - -	630	0	0			
Total rent of North Haugh while cropped				L.5092	10	0
Rent of South Haugh, 54 acres, for five years, viz.						
To crops 1807, 1808, and 1809, 12*l.* 12s. per acre - -	L. 2041	4	0			
To do. 1810, at 7*l.* - -	378	0	0			
To do. 1811, in hay, say 9*l.* -	486	0	0			
Total rent of South Haugh while cropped				L.2905	4	0
Total of the whole while in crop and hay				L. 14,659	14	0
Deduct the total amount of grass rent for these years, as above - - -				4756	10	0
Clear profit arising to the proprietor, by additional rent, from tillage and hay for six years, above the rent of the old turf for these years				L.9903	4	0

Besides triple rent for six years, the noble proprietor, so far from drawing an inferior rent afterwards for the new pasture, compared with what he received for the old turf, now draws a very considerable increase of rent for these different lots. That at the Race-ground did not, in old turf, average more than 2*l.* 5*s.*; and Mr Wilson values the first year's rent of the new pasture at 4*l.* 10*s.* The North Haugh was rented, in old turf, at 3*l.* 4*s.*; and Mr Wilson declares the new pasture to be worth 4*l.* 10*s.* And the South Haugh, which brought, in old turf, 4*l.*, was let the first year of the new pasture, after severe cropping, and without being sown down in the most perfect manner, at 5*l.* This, indeed, is not to be wondered at, as these lands were restored in pasture in a rich and most productive state. All the finest herbage were to be found in the greatest abundance, and most luxuriant growth; in particular white clovers, the poa's, the holcus's, the fescues, vernal grasses, &c.

As these lands were let for tillage, in small lots, to many different tenants, it is impossible to say how far they were gainers or losers by their leases. Probably some might be profiters, and others might suffer loss. It is certain, however, that some of them sold part of their crops at upwards of 18*l.* per acre. But however this may be, the public have been immense gainers. All these lands were four, and the greatest part of them five years, under grain crops; and probably yielded, on an average, twelve bolls of grain per acre, *per annum*: And certainly from 40 to 50 bolls of grain, in the course of five years, and from 300 to 400 stones of good hay per acre, for the following crop, are of infinitely greater value to the public, than any quantity of beef or mutton produced, *per annum*, upon each acre of old turf, during the same period of time, making an ample allowance for the expenses of cultivation.

CHAP. VIII. APP. No. 5.

ON BREAKING UP OLD TURF FOR TILLAGE.

By MR ROBERT KERR.

IN the opinion of an agricultural writer, to whose sentiments on this and other topics due respect ought to be paid, there is no branch of practice in which the farmers of Britain are more defective than in the culture of land broken up from old grass, or in which greater improvement may be introduced. It rarely falls to the lot of many farmers to break up old pastures; and those who are concerned in this process, seldom have an opportunity of repeating any improvement they may have made in their first attempts. Owing to the imperfect mode of culture often practised on these occasions, the strong antipathy of most proprietors against renovating old grass by tillage may be attributed. A field of old grass is a treasure which deserves to be guarded, and ought not to be wantonly broken up, unless it can be shown that tillage will not deteriorate its value, or lessen its ability to carry good crops of grass afterwards. The object, therefore, of the present subdivison is to show, that it is perfectly practicable to plough such lands without dissipating the treasure they contain; and to restore them to grass, after carrying a round of crops, and being thoroughly cleaned by bare summer-fallow or drilled turnips, according to the nature of their respective soils, to the climate in which they are situated, or other local circumstances. Ploughing at proper intervals will never reduce the value of any land, provided the management while under tillage is properly executed. *

In attempting to elucidate this subject, besides the valuable observations contained in the treatise referred to, material aid has been acquired from a number of useful essays on this important subject in the Communications to the Board of Agriculture, Vol. III. Part 2. and particularly to the xvth essay in that volume, p. 293, by Mr J. Bailey of Chillingham in Northumberland. In the course of this discussion, following the example of experienced agriculturists whose opinions are alluded to, it is proposed to consider of the best method of breaking up old turf as adapted for several descriptions of soil, clay, rich loam, light or turnip soils, and peat soils respectively.

1. *Clay.*—When old grass land, of a clay soil, is to be converted to tillage, the most usual way of breaking up is by means of the plough. In this case once ploughing only is advisable, and that ought always to be given of a good depth, laying the plit well over, yet leaving a bold shoulder, which greatly facilitates the harrowing process. This ploughing ought to be given before winter, that the soil may become mellowed by the influence of frost; as otherwise it may require six or eight close doubles of the harrows before it can be properly finished off. For land broken up in this manner, oats ought always to be the first crop, as no other grain makes so good a return in this situation of the soil, while the natural grasses and other plants remain unrotted, and until vivacious roots are removed by subsequent fallow. The depth of the furrow, by which soils of this description are broken up, ought not to be less than six inches, on purpose to bury or cover up the surface turf, that it may speedily rot; or it may be *trench-ploughed* to great advantage by means of two ploughs following each other in the same furrow. In this case, the first plough is so tempered or regulated as only to pare off the surface turf, which it turns over into the bottom of the former *fur*, going about two inches deep: The second plough going about four inches deeper, covers over the whelmed sod with a comparatively clean soil, which pulverizes better afterwards in harrowing, than can be done with even the best laid plit of a single ploughing. †

---

* Brown's Treatise on Rural Affairs.

† Communic. to the Board of Agric. III. 294.

In many parts of Britain, when old turf is first broken up for tillage, the crops are apt, during the first two or three years, to die off entirely or in patches, from the ravages of the wire-worm or of various kinds of grubs. It is said that this calamity is most prevalent the first year; and that sowing culinary salt with the seed, or soon after, has often prevented, or greatly alleviated it. The most effectual remedy, however, for this calamity is, to *pare* and *burn* the surface, a process which will be described in the xiith chapter of this Report. As this evil is seldom so very extensive in the first year when the land is cropt with oats, it may be effectually removed by the use of a very perfect summer-fallow immediately succeeding that crop. Early fallow is likewise rendered necessary from the quantity of thistles † and root weeds, which, for the most part, infest newly broken up old turf.

When oats have been taken as the first crop, the sooner a thoroughly well wrought naked fallow is given, so much the better for the future fertility of the soil. On this occasion, as it is indispensable to good husbandry that the fallow should be perfectly well executed, seven or eight ploughings may be required, together with rolling, harrowing, and gathering out the roots of weeds by hand, till the soil is completely pulverized and effectually cleaned. In this state a good dressing of calcareous matter, especially lime, will be highly advantageous; as old grass land is peculiarly benefited by this article when first broken up. Muck is rarely advisable at the commencement of tillage on old grass land, as the soil is already well filled with animal and vegetable substances in a decaying state, which are converted into excellent manure by the operation of the lime and the fallow process, so as to enable it to carry heavy crops for some years. After the completion of the fallow process in due time, and in a favourable season, wheat may be sown. But if circumstances require the sowing of wheat to be delayed till after the middle of October, it may be proper to delay sowing till the month of February; as newly broken up old turf completely fallowed, is apt to throw out the young plants in winter. *

The most eligible third crop is beans drilled and horse-hoed; which may be followed by barley sown up with mixed rye-grass and clover. Yet as clover seldom thrives well on land which has been so recently broken up from old pasture, it were perhaps better to take a second crop of wheat after the drilled beans, and then to repeat summer fallow with muck for a *third* crop of wheat or a crop of barley, when the soil will be in excellent order to receive the grass seeds. By this plan, provided all the steps are conducted in an efficient manner, any old turf in the kingdom, either on clay soil or others, may not only be broken up for tillage with perfect safety, but, when thus renovated by tillage, will carry more grass than before. † By this means, likewise, the old tillage lands, worn out by continual cropping, may be laid down to pasture to recover vigour; and in this way a very large portion of the soil of the kingdom might be doubled in its productive value, and an ample supply of food provided for the increasing population, without the necessity of having recourse to importation. ||

---

† Summer fallow may check, but will not destroy, thistles (*serratula arvensis*), as its perennial roots are mostly below the reach of the plough.

* Brown's Treatise on Rural Affairs.

The course of crops recommended above, on first breaking up old turf for tillage, are, 1. Oats; 2. Fallow, with lime; 3. Wheat; 4. Drilled beans; 5. Wheat; 6. Fallow, with muck; 7. Wheat or barley, with mixed grass seeds; 8. Grass. If the land is to be continued under alternate husbandry, it is to be afterwards managed as formerly described in the general account already given of Scots improved management of tillage lands. When it is to be restored to permanent pasture, the mixture per acre for that purpose, to be sown in the seventh year of the rotation, may be the same as formerly mentioned. ‡

§ 2. *Loam.*—Heavy loam is to be managed in every respect in the same manner with clay; and so may light loams, having a dry bottom, and fit for turnip husbandry, only substituting a crop of turnips in the place of the naked fallow. It often happens, however, on breaking up old turf, that the land cannot be reduced to sufficiently fine tilth and cleanness in proper time for a crop of turnips in the second year. In this case, a crop of barley is recommended to succeed the oats of the first year, on purpose to rot out the grass roots. * On such occasions, two or even three successive crops of oats have been taken from newly broken up turf, and even to good purpose apparently; though this system cannot be recommended for general practice. On such soils, when the turnip crop is consumed on or before the first of March, spring-sown wheat may be taken as the subsequent crop, providing the state of the weather is such as to make the land sufficiently dry for being effectually harrowed. In the cultivation of spring-sown wheat, it is usual to plough the land as the turnip crop is consumed, and to sow the wheat immediately on these successive portions.

§ 3. *Light Soils.*—In general, the plan of management that has been already mentioned for sound loams, when broken up

---

† There can be no doubt of the excellence of this system, both for raising great value from the land when in grain crops, and also improving the herbage, when again laid down, both in quantity and quality. Land laid down for permanent pasture should *never be hayed the first year.*

|| Brown's Treatise on Rural Affairs.

‡ Communic. Board of Agric. vol. III. 298.

* Brown's Treatise on Rural Affairs.

from old turf, will be found to answer for all descriptions of light soils that are fit for tillage; only, on soils of this description, the course of cropping must be gentle, and the principal dependence for preserving their fertility, must rest upon turnips consumed where they grow, and the frequent recurrence of pasture. On such soils, likewise, wheat is a very precarious crop; and oats, barley and rye, are more to be depended on for satisfaction and profitable produce. For these soils, the rotations may be, 1. Oats; 2. Turnips; 3. Barley with grass-seeds; 4. Pasture; and returning again to the same rotation after two, three, or four years' pasture.

Light soils, of a fertile nature, will always be occupied to the greatest advantage under the alternate husbandry, by a quick succession of pasture and tillage. When so extremely light as to be apt to blow, such soils after a course of improvement, by being thoroughly cleaned under turnip fallow, and well dressed by lime and muck, will in general be most profitably occupied as permanent sheep pasture. Those which are of an extremely light and barren nature will pay best as rabbit-warrens.[*]

§ 4. *Peat Soils.*—On the management of soils of this description, which are in a great measure new to agriculture, some extended directions from the writings of a gentleman who has devoted much attention to this subject, have already been given. There are, however, large extents of thin peaty soil in many parts of the country, where the climate is extremely hostile to the growth of corn of any kind, which yet may be improved, and their worthless herbage extirpated, by meliorating their soils in consequence of ploughing and liming, and stocking them with better herbage. For the improvement of these soils, an ingenious and experienced correspondent of the Board of Agriculture, Mr J. Bailey of Chillingham in Northumberland, recommends the following plan: 1. Break up by paring and burning, and sow rape to be consumed on the ground; 2. Turnip fallow with lime; 3. Turnip fallow a second time, both crops eaten on the ground by sheep; 4. Mixed clover and rye-grass, sown in the spring without any grain crop, and rolled with the heavy roller. No kind of stock whatever to be allowed to enter upon this grass until the subsequent summer of the *fifth* year; when the grass is to be depastured with sheep only. After the second year, a few young cattle or horses may be admitted along with the sheep. In this manner, land not worth a shilling an acre of rent may be improved to the value of six or seven shillings.[†]

Notwithstanding the high authority of the gentleman quoted, many doubts are entertained concerning the expediency of the plan recommended by him for improving peat soils. It is plain that the expense would be great, and that many years must elapse before it can be reimbursed, even allowing that complete success is to follow. It therefore seems more advisable to attempt a grain crop after paring and burning, or at least after the rape crop, even in the ungenial climates to which he refers. In favourable years, some grain produce may be procured; and, at all events, the straw of the grain crop may be of material importance as winter fodder for horses and cattle, and for the production of dung to ameliorate the soil. When such soils are laid down to grass after improvement, they ought on no account to be broken up until they revert to the state of heath, which generally takes place in ten years or less, when a similar course of improvement must again be resorted to.

---

[*] Commun. to Board of Agric. III. 308.

[†] Commun. to Board of Agric. Ibid.

Additional Information regarding Hamilton Haugh, and the Breaking up of other old Pastures in that Neighbourhood.

Several hundred acres of land at Hamilton haugh and Hamilton park, were put up to auction on Monday the 3d January 1814, partly for pasture and part of it for two years tillage. Some of the lot set as high as 13*l.* 16s. per acre per annum, for two successive crops of oats, from pasture 19 years old, and a very large field averages above 10*l.* per acre for three years: though in turf of 19 years old, it did not yield more than from 2*l.* to 2*l.* 5s. per acre. It may be proper to add, that an enclosure at Gerren, the property of Lord Belhaven, which had been in pasture for many years, and did not yield more than from 3*l.* 10s. to 4*l.* of rent per Scotch acre in grass, was last year set by public auction, to be cropped with oats, in 1813 and 1814; and was let for these years, at 18*l.* 15s. per acre per annum.

Some of the lands round Loudoun Castle, that had been long in pasture, were cropped for two or three years past by the Earl of Moira, and the crops were excellent. Last year, the crops were sold by public auction; and several lots of oats uncut, brought upwards of 25*l.* per acre. Though in old turf, that land never set at more than 4*l.* per acre per annum.

There are many thousand acres treated in this way, in all the Western counties of Scotland.

CHAPTER IX.

APPENDIX, *Art.* (A.)

(Gen. Rep. vol. ii. p. 66).

REPORT TO THE HIGHLAND SOCIETY RESPECTING EARLY POTATOES.

By Dr DUNCAN jun. and Mr P. NEILL.

THE period of the year in which the price of food is highest, and poor people feel most severely the effects of a short crop, is the month or two immediately preceding harvest. Hence it is an object of the greatest importance, especially after a bad year, to provide an increased supply of food during these months; and perhaps the most effectual method of doing this, is by cultivating more extensively the Early Potato.

In Scotland, some of the most forward sorts of early potatoes are fit for use in the beginning of July; or, if properly managed, as early as the middle of June; and other varieties afford a supply till the beginning of September, when late potatoes from the fields come to be plentiful.

Very high prices are sometimes given for early potatoes. In the Edinburgh market, in the first week of July 1812, they sold at the rate of 3s. a Scotch pint; they continued nearly three weeks at 9d. a pint, or about 9s. a peck; and afterwards, till the late or field potatoes came in, they brought from 5s. to 1s. 6d. a peck. High prices are also drawn in Glasgow, Aberdeen, and all the populous towns of the country. There is ample encouragement, therefore, for the cultivation of a sufficient supply of early potatoes for the public markets. The advantage of cultivating a certain proportion of *earlies* is well understood by gentlemen, and by gentlemens' gardeners, in every part of Scotland: But some other classes of the inhabitants, to whom a supply of potatoes during the months of July and August would be of the greatest importance, seem not to be duly informed on the subject.

To operative manufacturers who possess small gardens,—to the numerous *portioners* in villages,—and, in short, to all the possessors of cottage-gardens or *kail-yards*, it would prove a signal conveniency and great saving to cultivate *early* in place of *late* potatoes; yet, with a few exceptions, the latter only are planted.

Suppose a cottage-garden to contain from six to twelve falls of ground; between three and four falls may be presumed to be planted with late potatoes, and in September or October the produce might, if properly managed, amount to a boll and a half, or two bolls. How great would be the advantage to the cottager, if one-half of his potatoes were of the *early* kind, which he might lift for use in the months of June, July and August, when the price of oatmeal is perhaps 6s. or even 7s. a stone! If the cottager have a wife and several children, the family supper must require about 1¾ lib. of oatmeal, which, at the above rate, cannot be estimated at less than 8d. Sterling. The produce of the two falls of *earlies* may be reckoned from ten to twelve pecks, affording a forpet a-day for six weeks; and the expense could not exceed 4s. The saving of money expenditure to the cottager, therefore, from thus deriving the family supper from his own garden, during that dear period of the year, would not be less than *four shillings a-week*, or 1*l.* 4s. in all. These advantages are understood in most parts of the Lothians, and of course very few of the cottagers in these counties ever think of planting late potatoes. By the beginning of September, when the earlies are exhausted, the first of the lates are ready for lifting. Where the cottage gardens are small, the whole space that can be spared for potatoes ought to be occupied with earlies.

There is still another advantage which attends the cultivation of early potatoes in cottage-gardens: the ground is partly cleared in June and July, and is wholly cleared in August; so that it may be dug over, and planted with greens or savoys for winter and spring supply, or with transplanted leeks. In East Lothian, as soon as the earlies are partly lifted, the cleared spot is dug over, and filled with greens or leeks; and this practice is continued as the ground is cleared, during the months of July and August.

Although it were true, that late potatoes are most prolific, or yield the largest crop, still this is counterbalanced by the circumstances of the earlies coming at a season when the necessaries of life are at a higher rate, and lasting till the field potatoes be ready; and also by their admitting of a second crop of vegetables for winter use, while, after lates, the ground lies uncropped till the following spring. But the fact is, that earlies admit of being planted nearly twice as close as the late sorts, and that, when so managed, they afford almost as heavy a crop.

The *first* earlies are the Ashleaved, London Early, Superfine Early, and different sorts of Early Dwarfs. The *second* earlies are the Cumberland Royal, Early White Kidney, Early Manly, from England; Early Red, from Berwickshire; and Early Flat, or Matthew Cree's, from Biggar in Peebles-shire; this last being by much the best of the second earlies.

The Goldfinder is now seldom planted, being full of eyes or buds: but in very sandy or gravelly soils, either it or the Cumberland Royal may be planted. When the soil is heavy, or a black loam, as is the case in many old kail-yards, the Early Flat, or Mathew Cree's, is preferable; or the Early Red, or American Early, which generally turns out very prolific.

In the months of July and August, there could be no difficulty in procuring seed-stock of early potatoes, they being so generally cultivated in gentlemens' gardens, and in market-gardens in every part of Scotland. It is of importance, however, to procure the kinds genuine at first; and this object is most likely to be secured by purchasing from nurserymen or market-gardeners. But unluckily, the possessors of cottage-gardens seldom think of procuring seed-potatoes till the spring months; and at that season, early potatoes are to be found in the hands only of seed-merchants or a few others, and the prices are necessarily advanced, so as sometimes to be beyond the reach of cottagers, who would cheerfully give 1s. a peck, but could not be expected to give 2s. 6d. or 3s.

The soils which answer best for late potatoes, will be found also to be best for earlies; and the culture of both kinds is the same, excepting that early potatoes ought to be planted much closer than the late kinds.

It may be useful however to state, that the growth of potatoes, and particularly of earlies, may be considerably accelerated by very simple means, viz. making them sprout an inch or two before planting. For this purpose, the sets may be cut in the month of February, and laid upon a floor on a thin layer of sand, or of barley chaff: the place should, if possible, be such that a stream of air, and light, may occasionally be admitted. Here they will send out shoots to the height of two or three inches. A preferable mode perhaps is often resorted to in Lancashire: The top of a dunghill that is in a state of fermentation, is levelled, and beat down firmly with the dung-fork; a covering of light, dry, sandy earth, two inches deep, is then laid on; on this are placed the sets close together, or within an inch of each other, with their eyes upwards; and they are covered an inch thick with the same sort of soil. When the weather is frosty, a slight covering of litter, ferns, or old straw, is laid on; but this is to be removed every mild day, in order to render the shoots somewhat hardy.

In planting out, it is necessary to make, with the spade or hoe, small trenches about four inches deep, allowing fifteen inches between each trench; the sets are carefully to be carried out and placed in these trenches, at five inches distance from each other; the earth is to be drawn cautiously upon them: and in case of sharp frost succeeding, it is still proper again to throw a very thin covering of coarse litter or useless straw over them. Earlies managed in this way, may be ready for use from the middle to the end of June.

When early potatoes are taken up in the months of June, July or August, the ground should be immediately dug over as the potatoes are removed, and planted with greens or savoys, for winter, or with transplanted leeks, by which means two crops are procured in the same season.

With regard to the best means of encouraging the cultivation of early potatoes, among Scottish cottagers, it does not appear, that the offering of premiums could be of any use, or that any more effectual method could be devised, than that of circulating widely, a short view of the advantages to be derived from it, with a recommendation to gentlemen throughout the country, to encourage the planting of earlies, and to put it in the power of the neighbouring cottagers, to procure seed-stock of some of the best early varieties.

CHAP. IX. APP. *Art.* (B.)

(Gen. Rep. vol. ii. p. 68).

NOTICES CONCERNING THE TASTE FOR FLOWERS PREVALENT AMONG THE OPERATIVE MANUFACTURERS AT PAISLEY; WITH AN ACCOUNT OF THE FLORIST SOCIETY INSTITUTED THERE.

THE operatives of Paisley, taking them at large, exhibit a condition of improvement very rarely indeed, if at all to be paralleled among persons in the same rank of life; and they are particularly remarkable in their taste for objects which please the eye by their beauty, for such occupations for amusement as require nice attentions, and for various intellectual gratifications. In their dress, in the furnishing of their houses, and in matters of a similar kind, they study a great degree of neatness. Even their pigeons, which they keep in considerable numbers, are known in the vicinity to be distinguished for their beauty and variety. Several operatives greatly excel in the management of bees; and communicate to each other their experiments and success. It will perhaps be difficult to find elsewhere, in the same classes of the community, an equal proportion of persons who occasionally entertain themselves with *making verses.* And it is probable, that for miscellaneous information, they are not to be equalled by the operatives in any place.* By a statement of the private reading societies in Great Britain which was some years ago exhibited in the newspapers, it appeared that a very considerable proportion of the whole (it is believed not less at that time than one-third) existed in Paisley. How far any of these attachments and habits may have been promoted by the inspirations of Flora, it may not be easy to determine, but all of them in some measure preceded the epoch of her homage and influence at Paisley.

---

* The only operatives in this nation, or perhaps in any other, who can be compared with them for information, are the miners at Leadhills, who work but six hours a day, and have with success devoted much of their leisure to the improvement of the mind. But the intellectual attainments of the Paisley operatives must be more various than theirs, and are probably in no department inferior.

It has been remarked by a gentleman of learning and philosophical observation in Paisley, † that " the attention to flowers which is so conspicuous there, is in a considerable degree an effect of the peculiar manufacturing habits of the people. It is well known, that not only for the execution of the most delicate ornamental muslins, but for the invention of patterns, the operative manufacturers of Paisley stand unrivalled. Their ingenuity is continually in exertion for new and pleasing elegancies, to diversify their fabrics. Now, where such habits obtain, the rearing of beautiful flowers, which is an object very congenial to them, will easily be adopted and pursued as a favourite amusement. On the other hand, it seems highly probable, that the rearing of flowers, by a re-action, must tend to improve the genius for invention in elegant fancy muslins.

" The florists of Paisley (it is observed by the same gentleman) have long been remarked for the peacefulness of their dispositions, and the sobriety of their manners. The Florist Club not only represses all irregularities at its weekly meetings, which dismiss at ten in the evening; but would eraze from its lists any disreputable name. It is pleasing to think, that not only the attachment of individuals to the culture of beautiful flowers, but the association of persons possessing this taste, seems to be favourable to social order."

Florists Society.

" The culture of pinks became an object of attention in Paisley and its vicinity, between the years 1785 and 1790. Till then, none but those of the most ordinary kinds were known there. But at that period, some seeds, reputed of good quality, were procured from London: The great bulk of these produced plain pinks. In a few instances, however, *laced* sorts appeared; which, being new, were greatly admired. The seeds of these were carefully preserved and cultivated; and many good sorts were procured from them. The florists persevered in cultivating these; and, at the same time, did not neglect other kinds brought year after year from London, where they were greatly excelled in varieties. And, by proceeding continually on the simple principle of saving and using the seeds of the finest pinks, the original qualities were not only preserved but improved. For some years past, all importation has ceased. On the contrary, plants reared in Paisley have been sent by order to London, and have been pronounced equal or superior to any in England.

---

† The Rev. William Ferrier.

"The spirit for improving pinks, and many other kinds of flowers, is cherished in Paisley by an appropriate institution, which encourages and methodizes a constant amicable competition. Those which are called Competition Flowers, are eight in number: viz. Auricula, Polyanthus, Hyacinth, Tulip, Anemone, Ranunculus, Pink, and Carnation. Other kinds are called Border Flowers. There is usually an annual competition of the best specimens of one or other of those eight kinds. On such occasions, from 40 to 100 manufacturers and tradesmen of the place dine together. Every one who has formerly gained a medal, is expected then to wear it. Five judges are appointed: of whom, for the most part, two are strangers, who are known to be skilful florists. Two guardians receive the articles for competition; and affix to each a private number, so that the judges cannot know to whom any of them belong till after the decision. The first prize, which is a silver medal, of about the value of a guinea, with a suitable inscription, is awarded to the person who presents, of his own rearing, the twelve specimens of the competing flower, which, taken collectively, are the best. The twelve next in general excellence, entitle the cultivator to an inscribed silver medal, worth about 15s. After the decision, the flower for next annual competition is announced. Pinks are brought into competition twice as often as any other species of flowers. To the honour of the Society's liberality, strangers may stand competitors upon the easy condition of purchasing a ticket for dinner. But the Society does not confine itself to annual meetings and remunerations. Every Thursday evening, from the flowering of the polyanthus, till the disappearance of the carnation, its members convene. At each meeting, every member may produce specimens of as many kinds of the eight competition flowers as are in season; and the best specimen of each kind entitles the possessor to one enrolment of his name in the Society's minute book for prizes. The successful competitor in the kind which the judges declare to be the most frequent among those presented for the night, is enrolled in a department of the minutes appropriate to the competition for the predominant flower. The successful competitors, for the secondary flowers of the night, are each enrolled in a list called the Competition of All Flowers. Should only one specimen of a kind be presented, the enrolment still takes place; because none would cut down their finest plants, were the accidental want of a rival specimen to render this sacrifice vain. But when each of the competition flowers is in the prime of its season, a competition for the best collection of specimens of six varieties of it is announced at one meeting, and decided at the next; and the name of the gainer is twice inserted. The weekly competition is determined, in ordinary cases, by two judges. If these do not agree, a thirdsman is chosen by the Club to decide; and should he demur, another judge is added. When the

the best flowers of a kind are required, three judges are appointed. At the end of the year, those records are investigated; and there is exhibited to the Society a statement of the different winners, of the number of the appearances of each in the books, of the particular flowers in which he excels, and even of the merits of those flowers. Honorary rewards are then distributed. The most successful florist receives perhaps a spade; the next a rake; and the third a trowel or knife.

"In the books, there is likewise a department for Border Flowers: and here the names of such members as from time to time produce the best of each sort are entered. And there is another department for the name of every member who presents the earliest-blown flower of its kind. When the books are annually reviewed, the comparative merits of the competitors in each of these last departments are estimated; but no prizes are assigned. When the earliest specimen, however, is a competition flower, the name of the florist stands not only in the department for the earliest flowers; but also in the prize minute-book.

"Some idea of the zeal of the Paisley cultivators may be formed, when it is stated, that several of them can show 70 or 80 of the most choice varieties of pinks; others 200 varieties of the choicest tulips; others 60 or 70 varieties of the best carnations, all named; besides many excellent inferior varieties of each kind.

"It may now be proper to advert briefly to what are reckoned by Paisley florists the characteristics of a good pink; and the best methods of bringing this flower to its perfection. Those flowers which are well laced, and least notched in the edge of the petal, and, as nearly as possible, rose-leaved, are considered as the grandest. Such as bloom fair, and are very double, and well laced, are also highly prized. The taste of each florist is, in some degree, his own standard for colours. But the best white for the body of the flower is always in request. In the lacing, a good black, shaded toward the centre with red, is much esteemed. Scarlet lacings are most rare, and are often preferred. A purple lace is very much admired; such as Davy's Dutchess of Devonshire, which is the model of a perfect pink. Very double flowers are apt to burst; and nearly all the parts of fructification having run into petals, they seldom produce any perfect seeds. The seeds of the notched flowers are rejected, unless their lacings be uncommonly fine. The best seeds are obtained from semi-double flowers, that have good colours. When these are planted, and allowed to flower, beside such as are more double, the seeds thus procured, produce many varieties, very different from each other, and, often, all different from the mother plant. From a seed-pod, 40 or 50 seeds may come to bloom; and in the whole number, there may not be found above two or three good sorts, equalling the mother plant. But it is the florist's care to propagate these few choice sorts; which he does by pipings and layers, in the usual way.

"The following is reckoned the best method of *blooming* pinks. They are tied to a small stick to keep them up; and when the petals are first seen in the pod, those pods which are most apt to burst are preserved, by putting on them a piece of card paper, cut with a hole and a slit, according to Mr Maddox's directions. The plants, when in bloom, are covered with pieces of tin, in shape of umbrellas, which defends them from the rain and the scorching sun." *

CHAP. IX. APP. *Art.* (C.)

(Gen. Rep. vol. ii. p. 72).

DIRECTIONS FOR THE CULTURE OF COTTAGE GARDENS,—BY THE LATE MR NICOL.—FROM A MS. IN THE POSSESSION OF THE RIGHT HON. SIR JOHN SINCLAIR, BART.

THE fittest articles of produce are, summer cabbage, winter kail, a few early potatoes, turnip, beans, leeks, and onions. The changes, (particularly if the cottager keeps a cow), clover, with barley, or lint, under one or other of which, a fourth part of his garden should always be. This is useful to his cow, or serves for a bleaching-green, and rambling-ground for his children, an object of considerable utility, and keeps them near their own homes, and from transgressing the neighbouring enclosures and plantations.

As, in my humble opinion, the Board of Agriculture would render this class of the community considerable service, by printing separately, and distributing gratis, to one or more persons in each hamlet, village, &c. Directions for the management of their little spots, I shall, in the most brief and plain manner, subjoin the simplest mode of cultivating the above articles of produce.

Summer Cabbage.

Seed of the early York (half an ounce) to be sown on a bed or border two yards long, and four feet wide, about the 10th of August. One hundred to be planted on the bean-ground, with dung, at eighteen inches square, the first week in October, and another as above, the first in March; kept clean of weeds, and earthed up, first, when they begin to take their first growth; and for good, when they are about eight or nine inches high.

---

* The materials of the preceding account of the Society of Paisley Florists, &c. were furnished by Mr John Findlay, gunsmith in Paisley, a very intelligent and successful florist.

Winter Kail,

that is, German greens (otherwise curlies) and savoys. The seed to be sown as above, about the first of June, and three or four hundred planted at fifteen or sixteen inches square on the potato ground without dung, about the middle of July or first of August; kept clean of weeds and earthed up, as directed above for cabbage.

Early Potatoes.

Plant of any of the early kinds on the clover ground, with or without dung, in rows twenty inches asunder and eight in the row, about the first of March. Cut the large ones into four, the middle-sized into two, and plant the small whole, preferring the large when they can be had, as the most likely to yield great returns. Plant them within forty-eight hours of cutting, but not sooner than twenty-four. Give the first hoeing when the plants appear; the second when about three inches high; and earth up when about eight or nine.

Early Turnip.

Sow of the early white Dutch (an ounce) on the cabbage ground with dung, about the middle of March; keep clean of weeds; and, when about two inches high, thin them out to nine inches square.

Beans.

Plant of the Lisbon or long-pod (about two or three pounds) on the leek ground without dung, in rows two feet asunder, and four inches in the row, about the middle of March, or when the leeks are done; earth-up, first, when about three inches high; and for good, when about six or eight.

Leeks.

Sow of the true Scotch (from one to two ounces) on a bed or border six or eight yards long, and four feet broad, about the first of March; and keep them clean of weeds. Plant them out (from one to two thousand) about the middle of June, or first of July, on the turnip ground, with or without dung, in rows a foot apart, and six inches in the row; making deep holes with the setting-stick, thrusting the plant to the bottom, and leaving the hole open. Keep clean of weeds, and top the plants once a month, to make them put out new heart-leaves, and swell in the stalk.

Onions.

Sow of the Strasburgh kind (from one to four ounces) in (from two to eight) beds six or seven yards long, and four feet wide; also on the turnip ground, with or without dung, about the first of March. Sift or sprinkle a little earth regularly over the seed; then tread the whole evenly with the foot, and rake or bush-harrow smooth. Keep the crop clean of weeds; and when about four inches high, thin them out to six inches square.

Clover, with Lint or Barley.

Sow of the red, if a cow is kept, otherwise of the white clover, any time in April, on the winter-kail ground without dung; with which sow lint or barley, thinly. The barley may either be cut green for the cow, or let ripen for the use of the *kail-pot.* The ground is to lie under clover next season only, and to be broke up for potatoes the following.

Let the ground be laid up in high narrow ridges at all times when not in crop. It is thereby effectually fallowed, and much less dung will be required. When the clover ground is broke up, it should be trenched, at least two spit deep, if the depth of soil will permit.

As cow and hog dung, and ashes, generally compose the cottage *dunghil,* and as all these properly mixed will make a very fit manure for most kinds of soil (especially if improved by the addition of a little lime, marl, the scrapings of roads, scourings of ditches, &c.) they should be regularly mixed together, by throwing them alternately on the same heap as they are taken from the byre, pigstye and fire-side; to increase which, every industrious means should be used.

Let the dung at all times be digged in as it is spread on the ground, or as soon afterwards as possible; otherwise much of its virtue will be lost. Sow and plant also, as soon as possible after digging; and never dig or trench when the ground is in a very wet state.

CHAP. IX. APP. *Art.* (D.)

(Gen. Rep. vol. ii. p. 72.)

OBSERVATIONS ON THE COTTAGE-GARDENS IN THE CARSE OF GOWRIE.

By MR ARCHIBALD GORRIE.

From Kinfauns, about four miles east from Perth, to Invergowrie, about three miles west of Dundee, including the Braes of the Carse, is an extent of arable ground measuring nearly 30,000 acres, all excellent soil, though widely differing in quality, in different parts. This district contains a population of about 7000, two-thirds of whom may be reckoned *cottagers*, including under this name the lower orders of the inhabitants of the villages, as well as farm servants, salmon-fishers and others.

The village cottagers, for the most part, possess a black loamy soil, from the villages being chiefly situate on the rising grounds, where the soil is generally what is termed *black land*; the villages of this description in the middle of the Carse, are Errol, Inchture, and Long Forgan; those on the Braes of the Carse, where the soil is exactly similar, are principally Balgarno, Ballanden, Kinnaird, Rait, Kilspindie, and Pitrodie. A number of detached cottages are situated on both sides of the turnpike-road between Inchyra, and Inchture, where the soil is chiefly a strong clay.

It may be said in general of all the gardens attached to the cottages here alluded to, that they are considerably too small to admit of any profitable mode of cropping, few of them exceeding ten falls, and many not amounting to nearly that size: the consequence is, that the ground being perpetually cropped with greens or cabbage, is of course much exhausted.

In the Braes of the Carse, where the soil and climate is favourable for preserving plants of greens and cabbage in winter, the cottagers generally sow what ground they can spare with them in August, and they find a ready market at Perth in the spring months. Many of them also raise kail-seed, which they sell to the nurserymen; but frequently they pay too little attention to this article, planting greens, cabbage, savoys, and plain kail promiscuously in one plot, so that none of the seeds can be depended on as genuine.

Another serious disadvantage to these gardens is, their being generally surrounded with ash-trees, a practice which does the horticultural genius of our forefathers no great credit, and the pernicious effects of which are still severely felt.

From these few remarks, it will appear, that the cottage-gardens being in general too small to admit of any regular or advantageous system of cropping, and the tenants having no right to cut down trees, the means of improvement must rest solely with the landed proprietors: it is they only, who, by affording a stimulus to industry, can cherish that laudable spirit of honest independence, so congenial to the sons of Caledonia. Fortunately, the philanthropy of many of the noblemen and gentlemen, landed proprietors in this district, has already been too conspicuous to admit of a doubt, that any thing will be long withheld by them, when it is demonstrated to be conducive to the welfare of the lower class of people: it is only necessary to point out the most probable method of effecting this, to insure their co-operation; and the expense that many of them have been at in building comfortable cottages, affords an earnest, that they will indulge them with an additional piece of ground, if this be shown to be necessary, to enable them in some measure to acquire a comfortable subsistence. But in doing this, the landed proprietor would not need to sacrifice his own interest: I believe the garden ground in this quarter rents at from 1s. to 1s. 3d. or even 1s. 6d. per fall: a fair average may be struck at 1s. 3d., which is at the rate of 10*l.* Sterling per acre, or about 3*l.* more than is paid per acre for any farm in this district: The landlord in reality would enhance the value of any part of his estate so laid out, about 40 *per cent.*, without any trouble or risk, besides enjoying the consciousness of having contributed to the welfare of a number of poor people.

Taking it for granted, that gentlemen will feel disposed to allow the cottagers on their estates a little extension of their garden ground, I beg leave to recommend it to those who may be the proprietors of cottages, where the soil is a black loam, to allow 40 falls Scots measure, to each cottage for garden ground: where the soil is clay, half that extent is as much as could be possessed with advantage by the cottager. And to enable them to pay their rent, and better their circumstances, I shall offer a few hints for managing cottage-gardens, of both soils, beginning with the black land.

The 40 falls should be laid out in four divisions, of 10 falls each, to undergo the following rotation of cropping.

1. Greens and cabbage 8 falls, onions 1 fall, raising kail or cabbage-seed, 1 fall.

2. Late potatoes 8 falls, early potatoes 2 falls, to be followed with

3. Carrots 8 falls, cabbage plants 2 falls; the ground for the carrots and plants, to be trenched two spit deep in August, before sowing the plants, and any time in the beginning of winter for the carrots.

4. Wheat with dung, and, at the separation of the crop, the ground to be winter dug, paring off the stubble within an inch of the surface, and laying it in the bottom.

The crops, according to the above rotations when properly managed, may be supposed to yield the following profits to the cottager.

The first division, consisting of greens, cabbage, onions and kail seed, will be consumed by the family, the kail seed excepted, of which he may be supposed to have 6 lib., which he can sell at 2s. per lib.; the surplus of cabbage and greens, will assist in rearing a pig during the summer months; if the onions have succeeded, a peck or two may be sold to neighbouring farmers, who seldom take the trouble of raising them for themselves. The second division, consisting wholly of potatoes, will be all used in the cottager's family: The early potatoes will be used by the 12th August; when these two falls should be prepared for cabbage plants, to form a part of the third division. These plants, in the spring, will meet with a ready sale among the neighbouring farmers, and their neighbours to the north of the Sidley hills, and will bring at an average 10s. per fall: The other 8 falls being trenched and sown with the large orange carrot, may be reckoned to produce about 80 stone of carrots, with which I would propose fattening the pig that was reared in the summer months by the refuse of the garden: this pig may be supposed to weigh, when fattened, from 8 to 12 stone, an important article for the cottager's family, besides the dung that will be made, if plenty of litter has been laid under the sow: this dung should be laid on the ground where the cabbage plants and carrots were, which is to form the fourth division, and to be cropped wholly with wheat. From the produce of this fourth division, the cottager will be able to pay his garden rent, and what he sold from the first and third divisions, will more than pay his house rent, leaving the produce of 27 falls for the use of his family.

As to those who possess a clay soil, 21 falls may be as much garden ground as the cottager can profit by, the soil being more difficult to labour, and the success more precarious than where the soil is a black loam.

This spot I would recommend laying out in three divisions of 7 falls each, to be cropped with a rotation of greens, potatoes, wheat.

The first division, of greens, cabbage, onions, &c. which follow the wheat, should have the ground prepared by throwing it up to the frost, immediately when the wheat is cut: if laid up in ridges so much the better, with long stubble, dug in, in order to meliorate the soil, and render it more fit for yielding potatoes and improving the other crops. I would recommend it to the cottager, to throw in heaps the cleanings of the great road, and after exposing this to the frost, and turning it once or twice, have it laid on the ground formerly dug about three inches thick, some frosty day in the month of February, and as soon as the ground is dry enough, have it dug over and cropped with cabbage, greens and onions. This compost, consisting chiefly of sharp sand, impregnated with the salts from horses dung and urine, forms an excellent dressing for all strong clay soils.

Where the cottage may not be situate near enough the great road for obtaining this compost, let him, if possible, obtain the cleanings from any of the *pows* that are so frequently to be met with in the low carse; this sediment formed from the rich soil of the braes, carried down by great floods of rain, would, if exposed to the frost, have the same effect as the cleanings of the road: but the cottager cannot be supposed to avail himself of either, if the compost cannot be collected within at most 200 yards of his garden: the expense of farther carriage would overbalance the profit.

As soon as the cabbage or any of the greens are cut, the ground should be instantly turned up to the frost when dry, to prepare the ground for potatoes, which is the second crop in rotation.

If any rotten straw, leaves of trees, bean haulm, and such like, can be easily procured and thrown in a heap to rot, it will form an excellent dressing to be laid in the drills with the seed potatoes, which, in a soil of this sort, should never be planted above two inches below the surface, leaving sufficient room for earthing up. In the beginning of June, it will be proper to have all the dung that was collected from ashes, laid on, to be wrought into the soil with a strong prong, and drawn up afterwards to the stems of the potatoes as they advance in growth.

When the potatoes are taken up, it will be necessary to stir the ground well, observing not to tread the soil in gathering; and no farther digging will be necessary to prepare the soil to receive the wheat seed, if the ground has been properly wrought as above directed. There is a potato, originally introduced by Dr Coventry, that is less disposed to curl, and is more prolific than any late potato I know. It is a reddish round potato, and is known here by the name of the Coventry potato. This sort I would recommend planting in all soils where potatoes are subject to curl; a frequent change of seed from a light soil and high situation will be attended with advantage. It may be added, that if the Coventry potato be planted in March, on a warm border, it will come in as early as any of the common early sorts, and is superior in quality. It likewise possesses the property of keeping long; even till the young potatoes of the following year come in.

The third crop in rotation is wheat, of which the cottager will easily know how to dispose.

I am well aware, that all general rules must admit of many exceptions: But were something similar to the above encouraged by gentlemen, and adopted by cottagers, it might be attended with much advantage to the poorer class, while it even would add a trifle to the rental of the landlord.

I shall only add, that no forest trees whatever ought to come in contact with the cottager's garden: it is cruel in the extreme, to allow a poor cottager only about 9 or 10 falls of garden ground, and to have that spot crowded with as many large ash trees, a spot for which he pays a comparatively high rent, and to which he has daily recourse for part of his subsistence. The custom is indeed wearing out; but from a sort of veneration which some gentlemen pay to old trees, too many vestiges of this practice still remain: No doubt, shelter is requisite for villages, and trees afford shelter; but a small strip of planting judiciously laid out, would answer the purpose; and, in point of ornament, there can be no comparison between a thriving strip of planting, of different sorts of evergreen and deciduous forest trees, and a few straggling naked old ash trees, whose uncouth appearance adds even to the horrors of winter.

CHAP. IX. APP. *Art.* (E.)

(Gen. Rep. vol. ii. p. 119.)

IT OF TABLE APPLES, PEARS, AND OTHER TREE FRUITS, FOR USE IN SUCCESSION FROM JULY TO JULY AGAIN, AS GENERALLY FURNISHED FROM HIS GRACE THE DUKE OF BUCCLEUCH'S GARDEN AT DALKEITH.

Communicated by MR MACDONALD.

Apples.	S. Juneating.
rom July till November.	S. Summer Strawberry.
	S. Autumn Strawberry.
	S. Oslin Pippin.
	S. Lemon Pippin.
	S. Thorle Pippin.
	S. Nonsuch do. Scarlet do.
	S. White Hawthorndean.
	S. Red Cluster.
om November till March.	W. Golden Pippin, two kinds.
	S. Ribston Pippin.
	W. Nonpareil, two kinds.
	W. Newton Pippin.
	W. Holland Pippin.
	W. Spitzenberg Pippin.
	S. & W. Golden Rennet.
	W. Pomme de Greece.
	W. Shephard's Fame.
	W. Arabian, New.
	W. Melville Pippin.
rom March till July.	W. Pomme d'Api.
	S. Royal Russet.
	W. Nonpareil Russet.
	S. Pile's Russet.
	S. Wheeler's Russet.
	W. Aromatic Russet.
Pears.	W. Jargonelle.
	S. Longueville.
	S. Summer Bergamot.
	S. Orange Bergamot.
	W. Summer Boncretien.
	W. Autumn Bergamot.
	W. Gansel's Bergamot.
	S. & W. Green Sugar.
	W. Early Primitive.
	S. Muirfowl Egg.

Pears.	S.	Gray Achan.
	W.	Green Chisel.
	W.	St Germain.
	W.	Cressane.
	W.	Brown Beurré.
	W.	Gray Beurré.
	W.	Winter Boncretien.
	W.	Swan's Egg.
	W.	Chaumontelle.
	W.	Colmar.
Cherries.	W.	Early Maydukes, two sorts.
	W.	Harrison's Heart.
	W.	Black Heart.
	W.	White Heart.
	W.	Amber Heart.
	W.	Morella.
Peaches in rotation.	W.	Early Nutmeg.
	W.	Early Ann.
	W.	Red Magdalen.
	W.	Royal George.
	W.	Grimwood's Royal George.
	W.	Noblesse.
	H.	Galland.
	H.	Bellegard.
	H.	Montaubon.
	H.	Millet's Mignon.
	W.	Smith's Early Newington.
	H.	Chancellor.
	W.	White Magdalen.
Nectarines.	H.	Red Roman.
	H.	Elruge.
	H.	Temple.
	W.	Fairchild's.
	H.	Clermont.
	H.	Dutilly's.
	H.	Brugnon.
	H.	Murray's.
	H.	Scarlet.
Apricots.	W.	Moorpark.
	W.	Breda, Early.
	W.	Masculine Early.
	W.	Brussels do.
	W.	Orange do.
Plums in rotation.	W.	Violet de Hautive.
	W.	Early Hautive.
	W.	New Orleans.
	W.	Early Morocco.

Plums in rotation.	W. Green Gage. W. Blue Gage. W. Blue Perdrigon. W. Apricot Plum. W. Fotheringham. W. White Magnum Bonum. W. Imperial.
Figs.	W. Early White. W. Blue.

Explanation. S. Standard.—W. Wall-tree.—H. House, the fruit requiring glass.

Chap. IX. App. *Art.* (F.)

List of the Different Varieties of Fruits, chiefly cultivated in Scotland.

(Gen. Rep. vol. ii. p. 124.)

I. APPLES.

Early Apples.

August.

Summer Queening. A pretty good fruit, and succeeds well even in the northern parts of Scotland. Standard.

Summer Thorle. A beautiful early pippin, fit for the table; and the tree a ready bearer. Standard and espalier.

Oslin, Original, or Arbroath pippin; Orzelon of Forsyth. This is an excellent early table apple; the tree grows freely by cuttings. Wall or espalier.

Jenneting, or Geniton, (considered as corruptions of *June-eating*). It ripens a month or six weeks earlier than any other apple, being generally ready in the end of July. It is however inferior in quality to the Oslin and some others of the early apples. Wall or standard.

Margaret or Magdalene apple. This is an early fruit, of good flavour; and the tree is generally productive. Espalier and standard.

September.

Summer Pearmain. This is ready for the table in the beginning of September, but does not keep long. Standard.

Summer Redstreak. A good fruit. Standard.

Summer Lud. A tolerable fruit. Standard.

Irish Pitcher. A large yellow apple, introduced from Ireland into Clydesdale. Should be more cultivated as a standard.

Summer Teuchat-egg. A small orange-coloured apple. Teuchat is the Scottish name of the lapwing.

White Melrose, or Muiros. A good apple, and the tree a good bearer.

Golden Rennet. This excellent apple ripens in Scotland in the end of September, and is fit either for the table or the kitchen. It keeps till January. Wall or standard.

Scarlet Rennet. A beautiful, but not a keeping fruit. Wall.

Hawthorndean, or White Apple. The tree is a free grower; and bears readily and plentifully in every part of Scotland. The fruit does not keep long, and is chiefly used in the kitchen. The tree itself is short-lived, generally beginning to decay when twelve or fifteen years old. Espalier and standard; and temporary standard in orchards.

Queen of England. A pretty good orchard apple; the tree a great bearer.

Wine Apple, sometimes called Queen apple. Accounted one of the best Scots autumn apples, either for table or kitchen, but does not keep well. Standard.

Nonsuch. A well known pippin. The tree generally bears more or less every season; but is apt to canker. Espalier and standard.

White or *Keswick Codlin.* The tree very quickly comes to a bearing state; and it is often trained round a hoop, the better to enable the branches to support the load of fruit. Standard.

Carlise Codlin. Tree a great bearer.

Royal Codlin. Tree a good bearer, and the fruit excellent for the kitchen. Standard.

Kentish Codlin or Filbasket. This is a very good baking apple, and is sometimes taken to the table; the tree produces abundantly. Espalier and standard.

Dutch Codlin. Tree not a great bearer, but the fruit is very good. None of the codlins are keeping apples. Espalier and standard.

September and October.

Ten-Shilling. A good apple; fit for both table and kitchen use. Espalier.

Carberry Pippin. A good table apple; and keeps long. The tree a tolerable bearer. Generally a standard.

Oily Pippin. An excellent table apple; the tree is a favourite standard.

Paradise Pippin or Magnum apple. A beautiful long apple. The tree succeeds very well in Scotland as an espalier.

Pencaitland Pippin. Tree generally a free bearer as a standard.

Luffness Pippin. Named from an old seat near Aberlady, East Lothian. Known in Clydesdale by the name of *Whistleberry.* Standard.

Astracan or Transparent. A Russian apple, large and of beautiful appearance; but with few other qualities to recommend it. Standard.

Dalmahoy Pippin. A good bearer. Named from the Earl of Morton's seat, near Edinburgh. Standard.

Moncrieff Pippin. A Carse of Gowrie orchard fruit. It is a good apple, and the tree generally productive.

Whitemore's Pippin. This is of Irish extraction, and occurs chiefly in Clydesdale. It is fit either for table or kitchen.

Orange Pippin. This is chiefly for kitchen use.

Lemon Pippin. A very pretty yellow, and somewhat russety apple, of a large size. The tree very soon begins to bear. It is a Clydesdale kind, but is cultivated as far north as Inverness. This is one of the very best apples for drying in a slow oven. Standard and espalier.

Cambusnethan Pippin. A beautiful and excellent fruit, named from the largest orchard in the vale of Clyde. It is one of the best apples known, and should be more cultivated.

Ribston Pippin. "A universal apple," says Mr Nicol, "for these kingdoms. It will thrive and even ripen at John-o-groat's, while it deserves a place at Exeter or at Cork." It is very fit for the table, and for the kitchen it is unrivalled. It keeps long, and bears abundantly. Wall or espalier.

Kentish Pippin. An excellent apple for table or kitchen use, but not much cultivated in Scotland. Standard.

Munch's Pippin. A tolerable fruit for the dessert. Standard.

Spice-Apple. This is not a bad fruit; and the tree is a good bearer. Espalier.

Golden Russet or Russetine. One of the best of the russets. Both a dessert and a kitchen apple. Espalier and standard.

Golden Mundi. The fruit is both beautiful and good; and fit either for table or kitchen. Standard.

Quince Apple. A small apple, shaped like the quince fruit. Espalier.

Courpendu, Red, White, and *Orthodox.* Large French apples, ripening about the end of September; much superior to the *Carpandy* of the Clydesdale orchards. Espaliers.

Summer Strawberry. This is a very good apple, and the tree generally produces well. Standard and espalier.

Seek-no-farther. A baking orchard apple.

White Custard. A good kitchen apple; and the tree a great bearer.

Monstrous Rennet. A large fruit; trees bear freely. Wall or espalier.

Red Calville, and *White Calville.* Both beautiful French autumn apples; the trees producing well against a wall, particularly the last; but also planted as espaliers and standards.

LATE APPLES.

Wheeler's Russet. An excellent apple for the kitchen, and keeps long. Wall.

Pile's Russet. A very good baking apple, and will keep till April. Wall.

Royal Russet, or Leathercoat. This a great bearer, and the fruit keeps well. It is excellent for the kitchen, but may also appear in the dessert. Espalier and standard.

Lawman's Pearmain. A good apple both for table and kitchen, and keeps well. Standard.

Winter or Hertfordshire *Pearmain.* A large fruit, excellent for baking; keeps till March. Standard.

Loan's Pearmain. A very pretty apple, often cultivated in Scotland, and keeps well. South wall.

Royal Pearmain. A beautiful large apple, rather late in ripening, but one of the best of the pearmains for the table. Wall or espalier.

Holland Pippin. A good fruit for the kitchen, and keeps long. Standard.

Balgone Pippin. This is very nearly allied to the golden pippin; but the tree grows more luxuriantly, and the fruit is larger. It well deserves the attention of horticulturists. It is named from a seat in East Lothian. Wall.

Golden Pippin. South wall. Excellent for the table, from November till March, and keeps tolerably well when pulled in a ripe state. The tree is extremely apt to canker in Scotland, particularly if the subsoil be wet.

Spitzenberg Pippin. An American apple. The fruit is excellent, with somewhat of the pine-apple flavour. It requires shelter, and a good soil; but seems to thrive better on a west than on a south wall.

Crofton. An excellent small Irish pippin, excellent for desserts. It is perhaps one of the best apples known. It is pretty common in the west of Scotland. Wall, espalier, or standard.

Aromatic Pippin. The fruit is of fine flavour; in eating from December to February. Wall or espalier.

Gogar or *Stone Pippin.* A free grower, and great bearer; the fruit keeps till May or June; and is good either for eating or baking. Named from the ancient seat of Gogar, near Edinburgh. Espalier and standard.

Grey Leadington. This is the best of the Leadington family. It grows freely, bears pretty well, and the fruit keeps long. Dr Gibson thinks it "superior to every other apple, if we except the golden pippin and golden rennet; nor (he adds) is it excelled by either of these kinds." It is named from Leadington or Lethington, the ancient seat of Secretary Maitland, near Haddington. Standard or espalier.

Stoup Leadington. A very large fruit, excellent for baking; a good bearer. Standard.

Green Leadington, White Leadington, Scarlet Leadington.—These leadingtons are tolerable fruits; and the trees bear pretty freely. All of them standards, and all of Scottish origin.

Naked Apple. A beautiful Clydesdale fruit, and keeps long. Tree, a good standard.

Salmon Apple. A very pretty apple, and good keeper. Standard.

Winter Redstreak. A good apple. Standard.

Winter Queening, or Julyflower. A general bearer; fruit excellent for the kitchen. Standard.

Winter Lud. A capital kitchen apple, and good keeper. Standard.

Winter Thorle. This is likewise a good fruit; but not generally cultivated. Standard.

Fail-me-never. A good kitchen apple; and the tree a capital bearer. Standard.

Lady Wemyss. This is a fine apple, originally cultivated in Fife. Standard.

Fulwood or Green Fulwood. One of the best Scottish baking apples. Keeps very long; and the tree is commonly productive. Standard.

Yorkshire Green or Greening. This is a good baking apple, and exquisite for sauces. The tree bears freely, and the fruit keeps long. Standard or espalier.

Norfolk Beaufin. A good baking apple, keeping firm till May or June; and the tree a great bearer. Standard.

Pursemouth. A good winter apple for kitchen use.

Cluster, Red, White, Green and Golden. These are all common in Clydesdale orchards, and are all good bearers and keepers.

Margill. A very good dessert apple; fit for use in January. South wall.

Pine. A good baking apple. Standard.

Violet Apple; so named from its flavour slightly resembling that of March violets. A good French apple, ripening in the end of October.

Cat's-head. A large baking apple, fit for orchards.

Carse of Gowrie, or Tower of Glammis. A beautiful fruit, and the tree commonly productive. It abounds in the Carse orchards, as its name implies.

Grey Rennet or Rennet-grise. Is a juicy French apple; ripening about the end of October. Wall.

Winter Strawberry, an excellent apple for table or kitchen; tree a good bearer as a standard.

Transparent, a Russian apple; tree not a great bearer.

Newton Pippin. From Long Island, N. America. A capital table fruit, but requires a wall, south aspect, and good soil and situation.

Nonpareil. Requires a wall, and a south aspect, in a sheltered situation, to bring it to maturity. It keeps very long, and is one of the best russets for the table.

Scarlet Nonpareil. Ripens better in Scotland than the former, and the fruit becomes larger, and more smooth and plump. Also requires a south or south-west wall.

John Apple, or Pomme de deux ans, is kept chiefly as a curiosity; sometimes on a wall, sometimes in the orchard.

Pomme d'Api, or Apius's apple, is also kept on the same account.

II. PEARS.

EARLY PEARS.

Jargonelle. A well known pear, (the Cuisse Madame of the French, whose jargonelle is our cuisse madame). * Wall, espalier, and standard.

Windsor Pear. A good fruit, ready in August and September, but does not keep. Wall.

Green Chisel. A good pear, ready in August and September. Common as a standard.

Summer Boncretien. A large juicy high-flavoured pear; but in Scotland the tree is rather a shy bearer. Ready in September. Wall.

Green Pear of Pinkie. A small summer pear, without much flavour; but the tree a constant bearer, as a standard or buzelar.

Forrow Cow. A good Clydesdale summer pear, of a large size; the tree grows freely and is a great bearer.

Grey Honey. This is a round summer pear. The tree grows to a large size as a standard, and bears well.

Prince's Pear. A small round summer fruit, ready in September, and will keep a fortnight. Tree generally a great bearer. Wall.

Pear Piper. A small summer pear; tree a constant bearer as a standard.

Saffron Pear or Green Honey. A summer pear and great bearer, in orchards.

Early Carnock. This is a summer pear, supposed of Scottish origin. A good standard.

Hanging Leaf. A capital Clydesdale summer pear; nearly of a round shape, and of red and yellow colours. The tree grows to a large size, but is not remarkable as a bearer.

Pear James or Early Pear. This is the first ripe in Scotland; tree grows to a considerable size, and is very productive as a garden standard.

Skinless Pear, or Early Russelet. A good summer pear; nearly allied to Pear James.

Elshinhaft, Kilwinning Pear, or Goodman Pear. A large growing tree, and great bearer. Scottish orchards.

Lemon or Lady's Lemon, or Lammas. Is an early pear, and the tree seldom fails to give a crop, as a standard. The fruit must be eaten soon after being gathered.

Crawford Pear, also sometimes called Lammas. It is one of the earliest pears in Scotland, and the tree an excellent bearer. It is very generally spread over the country as a standard.

Longueville. A good summer pear, and keeps for some weeks: the longueville of Jedburgh seems to be a variety; it keeps for months. Standard.

Golden Knap. Supposed to be originally Scottish. A small but good summer pear, and the tree a great bearer. A favourite standard.

Scots Bergamot. A large summer pear, of tender and juicy flesh. The tree is a great bearer, either as an espalier, buzelar, or standard.

Red Muscadelle, or La Bellissime. A summer pear of great beauty. S. or W. wall.

Early Achan. A summer pear, inferior to the late or winter achan; but the tree a copious bearer, as an espalier or standard.

Pear Saugh. A large yellow pear common in Clydesdale, but not a very desirable fruit. It is, however, remarked by Dr Gibson, that 'the tree is hardy, makes a large and beautiful stand-'ard, and is a great and constant bearer; so that no other kind 'of pear-tree is so profitable in an orchard as this.'

Keather or Ketherd. An autumn Clydesdale pear, often producing great crops.

Rose Pear, or Thorny Rose. A large autumn fruit of some flavour; not much cultivated. Standard.

Averat, August Muscat or Royal Pear. A capital pear, ripe in September. Tree a great bearer. Wall.

Great Mouthwater. A good pear, ready in September. Espalier or standard.

Perfumed Pear. Ready in September. Standard.

Yair, or Green Pear of the Yair. This is a sweet juicy pear; has not much flavour, but the tree is a good bearer, as a standard or espalier. Of Scottish origin, as the name intimates.

AUTUMN PEARS.

Autumn or English *Bergamot*. E. or W. wall. An excellent high-flavoured pear, ripening in October.

Monteith or John of Monteith. A sweet and pleasant fruit, but not sightly. Scottish standard.

Verte-longue, or Autumn Mouthwater. A very handsome late pear: in a dry soil and warm situation, the tree produces great crops in Scotland. Wall.

Swiss Bergamot. A well-flavoured autumn pear, ripe in October; tree an ample bearer. Wall.

Muscat Robine, Amber, or Queen's Pear. A well flavoured and juicy autumn pear. The tree bears best when old. Standard.

Late or *Grey Carnock,* or Drummond. An autumn pear, of similar qualities; but apt to grow mealy if kept. Is likewise said to be of Scottish origin. The tree bears freely, as an espalier or standard.

French Carnock. A pretty good autumn pear. Standard.

Doyenné or Dean's Pear; also called St Michael. Has been long known in Scotland, but not much cultivated. It is a great bearer. Wall.

Grey Good-wife. The tree grows vigorously and is a constant and great bearer. Favourite standard in Scottish orchards, and country gardens.

Flowered Muscat, Muscat fleuri, or Pear Nut. A great bearer as a standard.

Briar-bush or Nettie. Of Clydesdale origin. It is a small but good winter pear, ripens even in indifferent seasons, and the tree is generally a profuse bearer, as a standard.

Louise-bonne. A good winter pear, when planted against a wall, in a dry soil; and the tree generally bears well.

Orange Bergamot. An excellent high-flavoured late pear. Tree a good bearer as a standard. Supposed Scottish.

Muirfowl Egg. Often placed against walls in Scotland, but the standard fruit much higher flavoured. It is a well known autumn pear, and keeps well. It is said to be originally Scottish.

Galston's Muirfowl Egg. An excellent pear; the tree much liked as a standard.

Swan Egg. A very good late pear; in eating from November to Christmas. Generally planted against walls in Scotland, and produces fruit of a larger size, but not so high-flavoured as those from standard or espalier trees.

Green Sugar, or Sucré-vert. A good French table pear; the tree a great bearer. Walls.

Yellow Calder. A Clydesdale pear.

Grey Honey. Also a Clydesdale fruit; and though not a desirable pear, accounted a good one for orchards, the tree being exceedingly productive.

LATE PEARS.

Red Beurré, Beurré de Roy, sometimes called Grey Beurré. Requires a south wall, and every advantage of soil and shelter, in Scotland. Ripe in the end of October.

Crasanne, or Bergamot Crasanne. Likewise requires a south wall, and a good soil. It is an excellent winter pear, perhaps the best of the bergamot family.

Gansell's Bergamot. E. or W. wall. A winter pear.

L'Eschasserie. A first rate winter pear, sweet and delicately flavoured. In eating in December and January, Wall.

Virgoulé, or Ice Pear. A large, long, and pretty good winter pear; keeping very well till January. Wall.

Grey Achan, Black Achan, or Winter Achan. A capital late or winter pear, said to be of Scottish origin. Wall or espalier.

Holland Bergamot. An excellent winter pear, and keeps till April. Wall.

Easter Bergamot., or Bergamotte Bugi. A winter pear which keeps long, being in perfection in March. Wall.

Colmar, sometimes called Manna Pear. Requires a south wall, and the best soil and situation. Keeps throughout the winter.

Chaumontelle. Requires a south wall. A rich flavoured winter pear, by many thought the best; but even with the choicest soil and in the most sheltered situation, is only with difficulty brought to ripen in Scotland. Keeps till March.

Winter or Spanish *Boncretien*. Quintinye considers this as the very best late winter pear. The tree must have the best soil, and a good wall in Scotland. It is in eating in January.

Double flowering pear; so called from the flowers having a double range of petals. It is a large winter pear, excellent for preserving, as it acquires a beautiful red from the fire; and also good for baking. Standard.

Winter Thorn. A large late pear, a good bearer, and keeps two months, being excellent for the table in January. The tree agrees best with a light dry soil. Standard.

Cadillac or Catillac. A winter pear, excellent for baking. Keeps till April. Standard.

St Germain. A large, well flavoured winter pear, which keeps long. Tree requires a wall, but bears freely.

Uvedale's St Germain, or Union. A capital large baking pear, which keeps till April; the tree bears very freely, and should be more attended to. Standard.

Winter Citron, or Musk Orange; used chiefly for baking.

III. PLUMS.

EARLY PLUMS.

White Primordine or Jaunehautive. This is the earliest plum in Scotland, ripening from the beginning to the middle of August. The tree is a tolerable good bearer, on walls.

Early Damask or Morocco. This is an early plum, immediately succeeding the Jaunchautive.

Little Queen Claudia. A delicions small round fruit, ripe in the beginning of September. The tree grows freely and bears well, on walls.

La Royale. This is a capital plum, of a red colour. The tree is, however, a shy bearer. It probably might, like the Green Gage, succeed as a standard in favourable situations.

Orleans. This is a middling good plum, the tree is a vigorous grower, a very great bearer, and succeeds well as a standard in tolerable situations. It is very proper for a market fruit-garden; but it is likewise occasionally to be found placed against a wall. There are several varieties, as the Old or Red, the New, and White.

Blue Perdrigon. A good high-flavoured plum, of a violet colour: the tree is not a great bearer; standard and walls.

Black Perdrigon. Similar to the last, but of a darker colour, and somewhat later.

White Perdrigon. But an indifferent plum, though often to be found in old gardens, as a standard.

Green-gage. 'The best (says Mr Nicol) the most generally 'known and most highly esteemed of the plum kind.' In Clydesdale and in the Carse of Gowrie, and some parts of the west coast, near Greenock and about Bothkennar in Stirlingshire, where the soil is a rich deep hazely loam with a dry bottom, it ripens in tolerable seasons on standards, and acquires a higher flavour than when fostered with a wall. There are several varieties of the Gage; particularly the Yellow or White, and the Blue or Red Gage.

Imperatrice. The tree is hardy and no bad bearer, as a standard.

Precoce de Tours. Sometimes planted as a standard.

Monsieur Plum. This is a large fruit, resembling the white magnum. The tree is a copious bearer, as a standard.

Black Damask. The tree is a ready bearer, as a standard.

Maitre Claud. This is a well-flavoured plum; and the tree grows readily and bears well, as a standard.

Red Diaper, Diaprée Rouge or Rochecorbon. This is a large high-flavoured plum. The tree grows freely, and is a good bearer, as a standard.

LATER PLUMS.

Damson or Damascene. This is not much known in Scotland. It is very fit for orchards, as it bears abundantly.

Violet Damask or Great Damask of Tours. This requires a wall in Scotland.

Wine Sour. This is a Yorkshire plum, not much known in Scotland, but deserving more attention.

White Magnum-bonum, Yellow, White, Holland Magnum, or

Egg Plum. This is very common; the tree grows freely and seldom fails to bear, either on a wall, or as a standard.

Red Magnum-bonum, or Imperial. Also a large fruit; chiefly used for baking and preserving; and the tree a free bearer, as a standard.

Drap-d'or, *Golden Drop* or Cloth of Gold Plum. A good plum; but the tree is rather a shy bearer in Scotland, even on a wall.

Apricot Plum. The tree grows vigorously; but it succeeds best against a wall in Scotland.

Fotheringham, or Sheen Plum. A beautiful large red plum, of considerable flavour. The tree bears readily as a standard.

Large Queen Claudia. Very nearly resembles the green gage, and is an excellent plum. Is often placed against a wall.

Bullace. This is not uncommon as a standard, particularly in Clydesdale; it is a great bearer, and the fruit is excellent for baking or preserving. It is a distinct species from all the other plums, (Pr. insititia), growing naturally in hedges in England; but it is not indigenous to Scotland. There is a variety with wax coloured fruit, generally called the White Bullace.

Cherry-plum or Myrobalans. A small round fruit, like a large cherry. The tree blossoms too early to succeed generally in Scotland: it is however very ornamental as a standard.

Muscle plum,—*St Julian*,—*White pear plum*, are planted chiefly for stocks for peaches and apricots, and the finer sorts of plums.

IV. CHERRIES.

Mayduke. 'We have no cherry, (says Mr Nicol,) equal to 'this. It thrives in all situations.' It does very well as a standard, but on a good wall, and with a southern aspect, the fruit becomes considerably larger, and higher flavoured.

Holman's Duke. Nearly allied to the Mayduke, but said to be an improved variety.

Archduke, or Late Duke. This is also a good cherry, when ripened on a wall. But it does not do well as a standard.

Gascoigne's Heart, and Bleeding Heart, Herefordshire Heart, White Heart. These four are generally planted as wall-trees in Scotland.

Harrison's Heart. This is a large cherry of good qualities; and the tree bears more freely than the black or the white heart. Wall.

Lukeward. This is a very good heart, and the tree a great bearer, on walls.

Carnation Heart. The fruit is variegated red and white, and comes late; but is inferior in taste to the Mayduke. The tree does pretty well on treillages; but it is, in any way, rather tender for the climate of Scotland.

Morella. Though the taste of this cherry is not agreeable to many, yet when ripened on a wall in the full sun, it acquires a size and richness of flavour superior to any other. The tree grows freely and bears well: it is often placed on a north wall.

Kentish. This is the kind generally planted in orchards and market gardens. As the flowers are late of expanding, they generally escape the spring frosts, and afford a plentiful crop: The fruit, however, is fit only for tarts. The tree answers well either as a standard or buzelar.

Black Gean, is cultivated in old gardens and in orchards.

Lundie Gean. This is of a dark colour, and nearly as large as a common cherry. Orchards.

Hungarian Gean, is also a very good kind. Orchards.

Cluster Cherry. The tree makes a handsome dwarf-standard, and is often planted for ornament. The fruit is indifferent.

The *Black* and *White Tartarian Cherries,* which are cultivated at Petersburgh and other far northern places, and which have for some years been in the London nurseries, have not yet found their way to Scotland, where they might be expected to prove an acquisition.

V. APRICOTS,

NEARLY IN THE ORDER OF RIPENING.

Masculine. The tree is a good bearer, when the blossoms escape the spring frosts.

Breda. The tree hardy and generally a plentiful bearer. It has sometimes been tried as a standard.

Orange. The tree a free grower and good bearer.

Brussels. This is a very good high-flavoured and juicy fruit, and, what is of much importance in Scotland, the tree is very hardy, and at same time a good bearer.

Roman. The tree generally bears well.

Algiers, Turkey, Transparent. Are all occasionally cultivated; the last, however, being too tender for a Scottish climate.

Moorpark or *Lord Anson.* A fine large high-flavoured fruit. The tree requires the best soil, and south exposure on a good wall.

Peach Apricot. Resembles the Moorpark; but the tree requires a different mode of dressing from the other varieties, i. e. like a peach-tree.

VI. PEACHES,

NEARLY IN THE ORDER OF RIPENING.

Ann Peach. It is of English origin, and ripens early.

Red Nutmeg Peach. This is one of the earliest peaches, ripening by the middle of August.

The *Admirable.* The fruit is large and beautiful, being of a fine red colour; but the tree requires a very good situation. There is a late and an early Admirable.

Early Newington or Smith's Newington. This is a handsome middle-sized peach, high flavoured and juicy; and the tree is a good bearer.

Orange Peach. The tree is a great bearer.

The *Noblesse.* The tree grows freely, and bears pretty well.

The *Royal George, Early Purple, Late Purple, Small Mignonne, Old Newington,* and *Catherine peaches,* are also commonly cultivated on walls.

The *Red Magdalen.* The tree is a free grower, and great bearer. The *White Magdalen* makes a hardy wall peach.

The following require the protection of a house in Scotland:

Royal Kensington. Hitherto introduced only at a few gardens in Scotland. The tree grows freely, and is very seldom known to be blighted.

Bourdine. The tree is hardy, bearing well when old.

Chancellor, Bellegarde or *Gallande, Early Avant, Nivette, French Mignonne, Teton de Venus,* and *Mountabon,* are also cultivated in houses.

Of those which have now been mentioned, the Admirables and the Orange are pavies or cling-stones; the rest are free-stones. The Early Avant, Bellegarde, Royal George, Nivette and Noblesse, are generally twice worked, or double budded, and are known by the name of French peaches.

VII. NECTARINES.

The following are the sorts which are found to succeed best in this country.

Elruge. The tree is not only a free grower, even in a middling soil, but is a pretty sure bearer; and the fruit is large and handsome. Wall.

The *Murray Nectarine.* Is a most excellent fruit, and the tree a free grower, and tolerably good bearer. House.

Fairchild's Early Nectarine. Wall.

Duc de Tello and *Scarlet Nectarine.* House.

All of these are free-stones. Of the clingstones, the *Newington* and the *Red Roman* nectarines have been tried, but with very little success,—Scotland certainly not possessing sufficient climate for them. Both of these, however, do very well in the forcing-house. Another clingstone, the *Brugnon* or *Italian Nectarine,* is likewise a frequent inmate of the forcing-house, but is also occasionally tried on the open wall.

VIII. FIGS.

Blue or Black Ischia.
White or Brown Ischia.
White Early.

IX. GRAPES.

Royal or White Muscadine.
Miller Grape.
The above are the two most hardy varieties.
White Sweetwater.
Black Frontinac.
White Frontinac.
Grizzly Frontinac.
Black Hamburgh.
White Tokay.
Flame-coloured Tokay.
White Passe Mosque.
Grecian Grape.
White Muscat of Alexandria.
Black ditto.
Black Constantia.
White Constantia.
St Peter's Grape.
Black Lombardy.

X. GOOSEBERRIES.

The kinds cultivated are rather numerous; but the following seem upon the whole to be most esteemed.

Green.

Green Gascoigne.
Green Walnut.
Common Green.

White.

Crystal.
Royal George.

Yellow.

Golden Drop.
Golden Knap.
Honeycomb.
Sulphur.
Conqueror.
Globe Amber.
Long Yellow.
Cheadley's Golden Lion.
Yellow Champagne.
Common Yellow or Amber.
Yellow Globe.

Red.

Ironmonger.
Nutmeg.
Large Rough Red.
Smooth Red.
Red Champagne.
Red Walnut.
Captain.
Scots Red.
Preserving.

XI. CURRANTS.

Black.
Red.
Dutch White.
Common White.
Grizzled.

XII. RASPBERRIES.

Red Antwerp.
White Antwerp.
Cane or Red Cane.
Twice Bearing.
Common Red.
Common White.
Cornwall's New Superb, a fine large red fruit.

Chap. IX. App. *Art.* (G.)

(Gen. Rep. vol. ii. p. 124.)

On the Cultivation of Currants.

By Mr James Smith, Ormiston Hall.

From the demand for currants, the cultivation of that fruit has become a conſiderable object of late years, which is likely to continue, eſpecially for the manufacture of Britiſh or home made wine, which is obtained at nearly one-third of the price paid for foreign wines; and from the preſent emulation among a conſiderable part of the community, it bids fair to be of conſiderable national importance. The price of currants is almoſt incredible, particularly in the neighbourhood of the metropolis; and when the ſoils and ſituations are judiciouſly choſen for their cultivation, and the plants treated in a proper manner, there are perhaps few crops that will reward the proprietor more amply.

In cultivating currants, the moſt profitable, amongſt ſeveral varieties, are the black, red, and white Dutch.

The ſoil in which currants produce moſt fruit and of beſt quality, is a rich, black loam, rather inclined to be damp; but they thrive pretty well in any rich garden ſoil. On ſtiff clay or gravelly ſoil, they do little or no good; extremes of theſe ſoils ſhould therefore be rejected, or diſappointment will be the conſequence, more eſpecially for the black currant, which is leſs productive than the white or red in indifferent ſituations.

Currants may be raiſed from layers, ſuckers, ſeed, or cuttings; but the laſt is the ready and effectual way of rearing young plants for extenſive plantations; thoſe produced from layers ſeldom produce ſuch fine clean plants; ſuckers are frequently rejected, as being liable to continue producing ſuckers; thoſe raiſed from ſeed require more time; and although it is from the ſeed only, that new and improved varieties are to be expected, yet many of the ſeedlings always prove inferior to the mother plants.

When the plants are to be raiſed by cuttings, a ſufficient quantity of the ſtrongeſt of the laſt year's ſhoots ſhould be collected, and if poſſible of ſufficient length to allow a third or fourth of the upper part of the ſhoot to be cut off, leaving the under part from 16 to 18 inches long. The ſhoots ſhould be gone over ſingly, and beginning at the bottom, pick or rub off every bud except from three to five at the top, plant the cuttings in good ſoil, (if rather damp ſo much the better), in rows eighteen inches or two feet aſunder, and from eight inches to a foot betwixt the plants. In planting the cuttings, they ſhould be half, or rather more, into the ground; little more care will be neceſſary for the firſt year, but diſplacing any irregular ſhoots omitted when the buds were picked off before planting, and keeping the ground clear of weeds. If the plants are to remain two years in the nurſery lines, they muſt be gone over in any of the winter months, and regularly pruned, allowing only three or four young ſhoots to remain on the plants, and theſe ſhould be cut down to one-half of their length, or leſs or more, according to their ſtrength; but when plants are wanted, they are frequently planted out after the firſt year's growth, being generally well rooted in that time.

Thus far, the different ſorts of currants may be treated in the ſame manner; but afterwards they require different treatment. We ſhall begin firſt with the

Black Currant.

This ſort requires the dampeſt ſoil, and before planting, the ground ſhould be well dug or trenched over, adding what manure may be neceſſary; if a plot is intended to be planted, they ſhould be placed in a regular manner, ſix feet diſtant each way; the ſhoots ſhould be reduced to three or four on each plant, and theſe cut down to about one-third of their length, to make them put forth in a vigorous manner. The ſecond winter the plants ſhould be regularly pruned, cutting off the weakeſt of the ſhoots where they are too much crowded, keeping them in a thin and regular manner, ſeldom ſhortening the ſhoots but for a ſupply of young wood, or where they run out in a long and dangling ſtate. The plants ſhould be regularly pruned every ſeaſon, cutting out from one-third to one-fourth of the old and exhauſted wood annually, encouraging the ſtrongeſt and beſt placed ſhoots. In ſummer, the plants ſhould be gone over, diſplacing any ſuperfluous growth, more eſpecially from the centre of the buſhes. It is generally found that black currants ſucceed better on ſtandards, than on walls, at least produce most fruit. The shoots should not be cut to spurs, as they are very unproductive when treated in that manner. When the ground is dug amongst the plants in winter, care should be taken to cut as few of the roots as possible, only pointing or grubbing it over with a three-tongued fork. Manure may be added when found necessary; if dung is used, it should be well rotted. A light crop of vegetables, such as turnip, &c. may be sown amongst the plants for the first and second seasons; but none of them should be suffered to come in contact with any of the branches of the young plants. When plantations of currants are treated in this manner, they will continue for a number of years, and produce large quantities of fruit, and of fine quality.

The Dutch White, and the Red Currant.

The white and red currants are generally pruned and treated both in the same manner; but when they are reared on walls, they are treated differently to what they are when they are planted as standards.

When the white or red currants are planted on walls, the most elegant and profitable way is to train the branches upright at regular distances, ten or twelve inches separate, exactly perpendicular, allowing only five or six branches from each plant. The plants should be placed five feet distant from each other: after being planted, they should be headed down to within a little of the stem. The first season only two shoots should be allowed to rise from each plant, which may be trained to the wall in a diagonal manner. The winter following, these two shoots should be laid perfectly horizontal, the one right, the other left, each shoot being shortened to about eighteen inches or two feet long: as five or six branches are only allowed from each plant, all superfluous buds should be displaced from the shoots, especially from the centre of the plant, allowing only as many buds to remain as there are branches required, which should be left at regular distances. In summer, the shoots should be trained to the wall as they advance in growth, exactly perpendicular. In winter, the plants should be gone over, and the upright shoots shortened about one-third or one-fourth of their length, which should be regulated according to their strength. The succeeding season the branches will produce fine spurs; but care should be taken not to allow any suckers or unnecessary shoots to arise from the plants. In the succeeding winter's pruning, the spurs should be shortened to about an inch long, and the leading shoot shortened a little to make them push in a vigorous manner. Next season the spurs should be shortened in the same manner, always shortening the leading shoot when necessary.

White or red currants trained in the above way, have a fine effect, and when managed in a judicious manner, produce abundance of good fruit. Sometimes it is necessary, as the fruit begins to ripen, to shorten the shoots produced from the spurs, that the fruit may reap the benefit of the air. At all times unnecessary and luxuriant shoots should be displaced, as exhausting the strength of the plants, and preventing the fruit from ripening properly.

When a plantation of white or red currants are wanted as standards, they should be planted in rows, five or six feet distant from each other, and the same width between the plants; the shoots should be headed down to within a few inches of the stem: in summer, all superfluous shoots should be displaced. In the winter's pruning, the shoots should be thinned and shortened to about one half of their length. The succeeding season, the shoots will produce fine spurs; and two or three strong shoots from the upper part of the branches. In the winter's pruning, these spurs should be shortened to about an inch, and the strong leading shoots thinned out when too much crowded, leaving one, two or three on each branch as the nature of the case requires; these leading shoots should be shortened to about one half of their length. Next season, the plants should be pruned in the same manner, shortening the shoots on the spurs, encouraging new leaders to shoot when necessary, and so continue to manage the plants annually in the winter season. As the plants advance in growth, and get crowded, some of the most exhausted branches should be cut out, always leaving the plants in a thin and regular manner.

As currants pruned in this way produce weighty crops of fruit from the spurs, the leading branches should be kept from ten to fifteen inches from each other; the plants should be gone over regularly in summer, displacing all irregular or superfluous shoots, keeping the plants open in the centre, that the fruit may ripen properly, and not be hurt in damp weather, by water lodging amongst the clusters of the fruit. After the winter pruning, the ground should be neatly pointed over, and manure added when necessary. Plantations of currants, should be kept clear of weeds in the summer season, frequently hoeing the ground from time to time, which greatly encourages their growth, and prevents insects or vermin from lodging about the soil or plants.

It will hardly be necessary to observe, that the different sorts of currants, should be gathered dry, for if pulled when the fruit or plants are wet, the juices are very much hurt, and sometimes rendered of little or no value.

Chap. IX. App. *Art.* (H.)

(Gen. Rep. vol. ii. p. 131.)

Observations on the Improvement of Hot-houses, &c.

By John Henderson, Nurseryman, Brechin.

Double Trellis Frame.

In the year 1790, I conſtructed a double trellis frame for the training and ſupporting of vines. It was formed of wire and rods of malleable iron driven into the rafters; the firſt trellis one foot from the glaſs, and the ſecond one foot from that. On the former the young ſhoots are trained, and on the latter the bearing wood is ſupported; but to prevent crowding and confuſion, I never admit at one place more than two branches in the breadth of a ſaſh, that is, two ſhoots on the upper, and two fruit-branches on the lower trellis. I have found it of uſe to train vines in a ſerpentine form; it ſeems to add ſtrength to the eyes, and thereby to promote the fruitfulneſs of the branches. At the autumn pruning, all the wood on the under trellis is cut out, and the ſhoots on the upper are brought down to produce next year's crop. The additional trellis, it is obvious, greatly enlarges the training ſpace under the ſame dimenſions of glaſs; and in the uſe of it for twenty years, I have not experienced a ſingle failure of crop, but have frequently, in reducing them to the ripening quantity, taken out one half of the bunches.

I ſuggeſted this improvement to Mr Nicol, when he was writing his Forcing Gardener. In that work, he takes no notice of it; but fifteen years after, we find him, in his Gardener's Kalendar, p. 289, recommending the double trellis. It is to be remarked, however, that he directs (by ſome unaccountable miſtake), to train the young ſhoots on the lower inſtead of the upper trellis, a method which, by placing the ſhoots in the ſhade, would, according to uniform experience, greatly injure their fruitfulneſs.

It has frequently been remarked, that there is a great deficiency of fruit in the lower parts of houſes with perpendicular ſaſhes in front. An eaſy remedy may be found by placing the front ſaſhes on a level, or inclining them over an angle of about 64 deg. In this manner the glaſs is expoſed to the action of the ſun's rays, and both wood and fruit are as well ripened in the lower, as in any part of the houſe.

Triple Meridian Hot-houſe.

In order to increaſe light and heat, I have adopted a conſtruction, which may be termed the Triple Meridian Hot-houſe. The end of it is placed to the ſouth, and the roof, which is ridge-formed, is inclined in the ſame direction by a ſlope of one foot in ſix. In conſequence of the poſition of the houſe, one ſide has the ſun's rays at right angles at nine A. M., and the other at three P. M.; and on account of the ſlope to the ſouth in the roof, the heat of the ſun is enjoyed partially all the time he is above the horizon. Air is admitted by ventilators.

In my nurſeries at Brechin, I employ hot-beds conſtructed on the ſame principle. This form of a houſe ſaves ſhed, back-wall, and rafters; and after ſeven years trial, I can ſay it has anſwered the moſt ſanguine expectations.

Caſt-iron is a very advantageous ſubſtitute for wood in hot-houſes. It is incomparably more laſting, its appearance is more light and elegant, and by the proper diſpoſition of columns and ſcrews, rafters are ſaved, and expenſe leſſened, while all the requiſite ſtrength is preſerved.

Furnaces.

The only other improvement I ſhall mention, is in the conſtruction of furnaces. Inſtead of a common brick furnace, I introduce a box of four plates of caſt-iron, and build round it a brick caſe, leaving an empty ſpace all round the box. A drain open before and behind the houſe, paſſes under the furnace, and conveys into this ſpace a ſtream of air, which goes round the ſides of the furnace, then over the top of it, and is conveyed by an earthen pipe to the farther end of the houſe.

The following contrivance operates like a ſort of charring bellows. The chimney is built directly above the furnace, and over the top of this laſt a damper is inſerted. When the fire is newly kindled, by drawing the damper, the ſmoke will be carried directly up the chimney with great violence, and the coals will be quickly charred, and then the damper is to be ſhut. A furnace of this conſtruction muſt draw powerfully; will not dirty the flues with the ſoot of raw coals; will diffuſe over the houſe a ſuperior degree of heat; and by ſhutting up the fire from contact with the brick part of the frame, will prevent that neceſſity of repair which is almoſt perpetually recurring in the uſe of common furnaces.

Chap. IX. App. *Art.* (K.)

(Gen. Rep. vol. ii. p. 170.)

List of the principal sorts of Apples, Pears and Plums, cultivated in Clydesdale; those marked with an Asterisk being preferred.

Communicated by Mr Paterson, jun.

I. APPLES.

	No.		
*	1.	Red Cluſter	Winter Apple.
*	2.	White ditto	Harveſt ditto.
*	3.	Carpandy	Winter ditto.
*	4.	White Marrow	Harveſt ditto.
*	5.	Red ditto	Winter ditto.
	6.	Cambuſnethan pippin, or New apple	Ditto ditto.
*	7.	Summer Strawberry	Harveſt ditto.
*	8.	Winter ditto	Winter ditto.
	9.	Thorl Pippin	Harveſt ditto.
	10.	Lemon Pippin	Winter ditto.
*	11.	Carſe of Gowrie	Ditto ditto.
*	12.	Norfolk Beauſin	Ditto ditto.
*	13.	Fulwood	Ditto ditto.
*	14.	Grey Leadington	Ditto ditto.
*	15.	White ditto	Harveſt ditto.
*	16.	Stoup, or Tankard ditto	Ditto ditto.
*	17.	Naked Apple	Winter ditto.
	18.	Marigold, or Saffron Pippin	Summer ditto.
*	19.	Margaret, or Ruſſian Tranſparent	Harveſt ditto.
*	20.	Tranſparent, (on Clyde called Holmſoot Tranſparent)	Ditto ditto.
*	21.	Hawthornden	Ditto ditto.

TABLE *illustrative of thnks contained in them, and the Prices at whi* PATERSON *junior.*

Proprietors' Names.	N	
John Hamillton Esq. . .	D	It is supposed, that Cambusnethan orchards may contain from 25 to 30 acres; and the average price for the years 1808, 1809, 1810, 1811, is near 500*l.* Sterling yearly.
Robert Lockhart Esq. . .	C	
Mr Steuart	B	
Mr Harvie	D	
Dr Jaffray	M	
Duke of Hamilton . . .	D	
Mr Stewart	N	
Mrs Howison	H	
Mr Steel	W	
Lord Hyndford	M	
Mr Hutchison	W	
Colonel Campbell's children	D	
. . .	T	
Duke of Hamilton . .	C	
Sir James Steuart . . .	G	
Rev. Mr Bell	M	
James Brown	H	
John Gilchrist	O	
James Gilchrist	G	
Lord Douglas	T	
Duke of Hamilton . .	C	
James Lang	B	
Rev. James Clason . . .	G	
Lord Belhaven	C	Supposed.
Ditto	G	
Sir James Steuart . .	O	Three acres of this orchard made in 1804, and one acre in the year 1811.
Ditto	D	

Besides the orchards m mber of new made orchards, which, as yet, have prod

Between Lanark and H stated at sixty. The number of acres employed as ich consists of braes, or land not arable: that is, there with fruit-trees. No notice is here taken of the gooseb sum), they being generally reckoned an under crop.

[*To front p.* 457.

T*their Soil, and the prices which the Fruit*
Iessrs MACHRAY *and* GORRIE.

1	*Prices at which the Fruit sold. For Crops,*												
	9.	1810.			1811.			1812.			1813.		
	d.	L.	s.	d.	L.	s.	d.	L.	s.	d.	L.	s.	d.
George	0	82	0	0	42	0	0	38	0	0	28	0	0
ditto	0	64	0	0	60	0	0	90	0	0	30	0	0
ditto		600	0	0		to			—		1000	0	0
ditto	0	40	0	0	10	0	0	9	0	0	10	0	0
Lord K	0	10	0	0	12	0	0	13	0	0	10	0	0
ditto		40	0	0	35	0	0	24	0	0	30	0	0
David	0	30	0	0	100	0	0	96	0	0	82	0	0
Mr Hu	0	170	0	0	91	0	0	190	0	0	70	0	0
Mr Jam	0	65	0	0	9	0	0	60	0	0	28	0	0
David	0	52	0	0	60	0	0	67	0	0	30	0	0
ditto	0	20	0	0	20	0	0	30	0	0	16	0	0
ditto	0	60	0	0	36	0	0	45	0	0	20	0	0
ditto	0	64	0	0	20	0	0	25	0	0	10	0	0
Dundee	0	35	0	0	40	0	0	52	0	0	17	0	0
Lord K	0	15	0	0	25	0	0	22	0	0	6	0	0
Captain	0	40	0	0	68	0	0	70	0	0	35	0	0
John L	0	125	0	0	80	0	0	90	0	0	70	0	0
Mr He	0	30	0	0	25	0	0	20	0	0	16	0	0
Robert	0	20	0	0	22	0	0	30	0	0	10	0	0
John L	0	105	0	0	50	0	0	70	0	0	34	0	0
Lawren	0	16	0	0	13	0	0	10	0	0	12	0	0
James			from		25	to		35	0	0	35	0	0
ditto	0	30	0	0	45	0	0	50	0	0	35	0	0
Colonel	0	65	0	0	60	0	0	90	0	0	45	0	0
Lord Ki	0	45	0	0	34	0	0	106	0	0	32	0	0
Captain	0	120	0	0	62	0	0	52	0	0	40	0	0
ditto	0	12	0	0	8	0	0	10	0	0	3	0	0
James R	0	12	0	0	10	0	0	6	0	0	10	0	0
Patrick	0	184	0	0		—		46	0	0	36	0	0
Lawren	0	20	0	0	18	0	0	25	0	0	10	0	0
ditto	0	16	0	0	20	0	0	12	0	0	16	0	0
Lord Gr	0	20	0	0	16	0	0	26	0	0	16	0	0
Thomas													
General													
Miss Ye													
Lord Gr													
Mr Web													
James M													

Vchards are not let for the whole year,

	N°.		
*	22.	Nonſuch	Harveſt ditto.
	23.	Yorkſhire Green	Winter ditto.
	24.	Almond	Summer ditto.
	25.	Scarlet Pearmain	Ditto ditto.
	26.	Valleyfield Salmon, or Harveſt Marrow	Harveſt ditto.
*	27.	Paradiſe Pippin, or Egg Apple	Winter ditto.
	28.	White Greaſy Pippin	Ditto ditto.
	29.	Corſtorphine Pippin	Harveſt ditto.
	30.	Ditto Apple	Winter ditto.
*	31.	White, or Carliſle Codlin, or Keſwick Codlin	Harveſt ditto.
	32.	Iriſh Cluſter	Ditto ditto.
	33.	Dutch Fulwood	Winter ditto.
	34.	Dryly Pippin	Summer ditto.
*	35.	Newton Pippin	Winter ditto.
	36.	Iriſh Pitcher, a new Apple from Ireland	Harveſt ditto.
*	37.	Gogar Pippin	Winter ditto.
	38.	Royal Ruſſet	Ditto ditto.
*	39.	Dunbarton Pippin	Harveſt ditto.
	40.	Red Greaſy Pippin, or Milford	Ditto ditto.
	41.	Golden Rennet	Winter ditto.
	42.	Summer Marigold	Harveſt ditto.
	43.	Kentiſh Codlin, or Dolphin	Winter ditto.
	44.	Kirkfield, or Kirton Pippin	Harveſt ditto.
*	45.	Dutcheſs of Hamilton's Whiſtleberry	Ditto ditto.
	46.	Early Magdalene	Summer ditto.
	47.	Kentiſh Pippin	Winter ditto.
	48.	Golden Ruſſet	Ditto ditto.
	49.	Sheep Head	Ditto ditto.
*	50.	Dutch Codlin	Ditto ditto.
	51.	Lady Apple	Summer ditto.
	52.	Dunſide, or Orbiſton Pippin	Winter ditto.
	53.	Walla Bona	Ditto ditto.
	54.	Early Fullwood	Harveſt ditto.
*	55.	Hamilton Pippin	Winter ditto.
	56.	Bloodheart	Harveſt ditto.
	57.	American Pippin	Ditto ditto.
*	58.	Kentiſh Filbaſket	Winter ditto.
	59.	Lady Lemon	Harveſt ditto.
*	60.	Ribſton Pippin	Winter ditto.
	61.	Royal Pearmain	Ditto ditto.
	62.	Golden Pippin	Ditto ditto.
	63.	Red Kentiſh Pippin	Autumn ditto.

New Sorts.

1. Iriſh Pitcher, very good, and ſeems a good bearer.
2. Cambuſnethan Pippin, promiſes to be a good bearer, and is a moſt beautiful apple, and alſo of a good quality.
3. Red Kentiſh Pippin, a beautiful apple.

II. PEARS.

	No.		
*	1.	Muirfowl Egg	Winter Pear.
*	2.	Crawford	Summer ditto.
*	3.	Achan	Winter ditto.
*	4.	White Achan	Harveſt ditto.
*	5.	Green Pear of Pinkey	Summer ditto.
*	6.	Lemon Lady, or Lady Lamont	Ditto ditto
*	7.	Green Chiſel, or Sugar Bergamot	Ditto ditto.
*	8.	Green Pear of Yair	Winter ditto.
*	9.	Dunbarton	Summer ditto.
*	10.	Vicar	Harveſt ditto.
	11.	Red Bergamot	Ditto ditto.
	12.	Green ditto	Ditto ditto.
*	13.	Scots Carnock, or Drummond	Ditto ditto.
	14.	Duck Egg	Ditto ditto.
	15.	Saugh	Ditto ditto.
	16.	Red Saffron	Summer ditto.
	17.	Pear James	Ditto ditto.
*	18.	Longueville	Harveſt ditto.
	19.	Summer Boncretien	Ditto ditto.
*	20.	Grey Goodwife, (two ſorts, Red and Grey)	Winter ditto.
*	21.	Pear Honey	Harveſt ditto.
	22.	French Carnock	Ditto ditto.
	23.	Robert	Ditto ditto.
	24.	Gold Knap	Ditto ditto.
	25.	French Bergamot	Ditto ditto.
	26.	Jargonelle, (cultivated on walls)	Ditto ditto.
*	27.	Brier Buſh	Winter ditto.
*	28.	Forrow Cow	Harveſt ditto.
	29.	Fair Maid of France	Summer ditto.

III. PLUMS.

No.
1. Orleans (old kind.)
2. Burnet.
3. Whitecorn.
4. Scarlet.
5. Primordian, or Jaunhautive.
6. Cheston.
7. Green Gage.
8. Horse ditto, or *Horse-jag*.
9. Blue ditto.
10. St Julian.
11. Imperial, (Red.)
12. Precoce de Tours.
13. Damson.
14. Magnum Bonum.

15. Devons, Black.
16. Ditto, White.
17. Ditto, Grey.
18. Thorn Plum.

Note. The above lists might be greatly increased, as the kinds of apples and pears on Clyde, are almost innumerable; but the above may be relied upon as most cultivated. It is worthy of notice, that if the weather during spring were uniformly good and mild, the lists given above might be reduced one-half; and the crop produced from that half, might confidently be expected to be greater than is gathered from orchards planted with all these kinds. But generally every season, there is some frosty weather, or easterly winds, in some part of spring, while some kinds of fruit are in blossom. Now, as the different varieties of fruit do not blossom all at the same time, it generally happens, that some sorts are in bloom when the weather is mild, and consequently set well, and yield a good crop; while those trees that are in bloom during the bad weather, generally fail, or produce but a scanty crop.

CHAP. IX. APP. *Art.* (M.)

(Gen. Rep. vol. ii. p. 172.)

LIST OF THE PRINCIPAL SORTS OF APPLES, PEARS, AND PLUMS, CULTIVATED IN THE CARSE OF GOWRIE,

Communicated by Messrs MACHRAY and GORRIE.

No.	ORCHARD APPLES.		
1.	Tower of Glammis, or Carse of Gowrie, -	Winter Apple.	
2.	Moncrieff Pippin, or Gogar,	Winter.	
3.	Lady's Finger, or Magnum bonum, - -	Winter.	Table.
4.	Cat's Head, - -	Winter.	
5.	Norfolk Beaufin, -	Winter.	
6.	Naked Apple, -	Winter.	
7.	Ribston Pippin, -	Winter.	Table.
8.	Loman's Pearmain, -	Winter.	
9.	White Codlin, -	Autumn.	
10.	Dupplin Codlin, -	Autumn.	
11.	Kinnoul Codlin, a new excellent apple, - -	Autumn.	
12.	Glammis Pippin, - -	November.	
13.	Moncur Apple, - -	Winter.	
14.	Royal Codlin, -	November.	
15.	Hawthorndean, - -	Winter.	
16.	Stoup Leadington, -	Autumn.	

NO.			
17.	Scarlet Leadington,	Autumn.	
18.	Striped Leadington,	Autumn.	
19.	Grey Leadington,	Winter.	Table.
20.	Monstrous Rennet,	November.	
21.	Lamont,	Winter.	
22.	Black Stock, or Fox Whelps,	Winter.	
23.	Green Fulwood,	Winter.	
24.	Bulastrae Hill,	November.	
25.	White Captain,	Autumn.	
26.	Summer Strawberry, or Brandy,	Autumn.	
27.	Winter Strawberry, or Winter Brandy,	Winter.	
28.	Carlisle Codlin,	November.	
29.	Royal Russet,	Winter.	
30.	Lemon Pippin,	Winter.	
31.	Summer Queening,	Autumn.	
32.	Winter Queening,	Winter.	
33.	Oslin, or Arbroath Pippin,	Autumn.	Table.
34.	Red Wine, or Queen of England,	November.	

N. B.—The above are all great bearers.

35.	Yorkshire Green,	Winter.	
36.	Margill,	Winter.	Table.
37.	Chartreaux Corpendu,	Autumn.	Table.
38.	Margaret,	November.	Table.
39.	Nonsuch,	November.	
40.	Dutch Codlin,	Autumn.	Table.
41.	Golden Rennet,	Winter.	Table.
42.	Juneating,	Autumn.	Table.
43.	Summer Pearmain,	Autumn.	Table.
44.	French Corpendu,	November.	Table.
45.	Summer Redstreak,	Autumn,	
46.	Winter Redstrsak,	Winter.	Table.
47.	Orange Pippin,	Autumn.	
48.	Golden Russet,	Winter.	Table.
49.	Maggy Duncan, a large green apple,	November.	
50.	Lady Johnston, a large beautiful apple,	November.	
51.	Red Calville,	Autumn.	
52.	White Leadington,	Autumn.	Table.
53.	Balmano Pippin,	Autumn.	Table.
54.	Sugar Loaf,	November.	
55.	Lady Apple,	Winter.	
56.	Maclean,	Winter.	

No.		
57.	Berry's Favourite, cultivated about Dundee, -	Winter.
58.	Purse Mouth. -	

The following are generally trained against walls, and are all considered as dessert apples.

59.	Nonpareil, -	Winter.
60.	Golden Pippin, -	Winter.
61.	Loan's Pearmain, -	Winter.
62.	Scarlet Nonpareil, -	Winter.
63.	Kirton Pippin, -	Autumn.
64.	Revelston Pippin, -	August.
65.	Sykehouse Apple, -	Winter.
66.	Grey Rennet, -	Winter.
67.	Pile's Russet, -	Winter.
68.	American Early, -	Autumn.
69.	Sack Apple, -	Winter.
70.	Fair maid of Taunton.	

ORCHARD PEARS.

1.	Green Yair, -	Winter Pear.	
2.	Grey Achan, -	Winter.	Table.
3.	Black Achan, -	Winter.	Table.
4.	Crawford, -	Autumn.	Table.
5.	Carnock, or Drummond,	Autumn.	Table.
6.	Swan Egg, -	November.	Table.
7.	Longueville, -	Autumn.	
8.	Scots Bergamot, -	Autumn.	
9.	Summer Bergamot, -	Autumn.	
10.	Autumn Bergamot, -	Autumn.	
11.	Muirfowl Egg, -	Autumn.	
12.	Benvie, Summer and Autumn,	Autumn.	
13.	Green Chisel, -	August.	
14.	Pear James, -	August.	
15.	Briar Bush, -	November.	
16.	Pear Nut, a great bearer,	Autumn.	
17.	Gold Knap, -	August.	
18.	Galston's Muirfowl Egg,	Autumn.	
19.	Pow Megg, -	November.	
20.	Elshenhaft, -	Autumn.	
21.	Christie. A large pear and good bearer, - -	Autumn.	
22.	Soutar's Thumb, -	Autumn.	
23.	Green Honey, -	August.	
24.	Cadillac, -	Winter.	
25.	Jargonelle, (chiefly on walls)	Autumn.	

The following are trained against walls.

NO.		
26.	Crasanne,	Winter.
27.	Chaumontelle,	Winter.
28.	Colmar.	Winter.
29.	Brown Beurré,	Winter.
30.	French Bergamot, (wall or espalier),	Winter.
31.	White Beurré,	Autumn.
32.	Cuisse Madam,	Autumn.
33.	Gansell's Bergamot,	Autumn.
34.	Swiss Bergamot,	Autumn.
35.	St Germain,	Winter.
36.	Orange Bergamot,	Winter.

ORCHARD PLUMS.

1. White Magnum Bonum.
2. Common Orleans.
3. Precoce de Tours.
4. Red Magnum.
5. Blue Perdrigon.
6. Damson.
7. Fotheringham.
8. Green Julian, &c.

CHAP. IX. APP. *Art.* (N.)

(Gen. Rep. vol. ii. p. 188.)

INFORMATION REGARDING THE CARLISLE AND KESWICK CODLIN APPLES.

Extracted from various Communications on that subject, addressed to the Right Hon. SIR JOHN SINCLAIR, Bart.

The *Carlisle* Codlin possesses the peculiar property of being fit for use, at an earlier stage of its growth, than any other Apple, making an excellent tart, when no bigger than the smallest plum. If blanched in boiling water when of that size, the outer rind slips off, and the fruit may be baked whole; the colour is then a transparent green, and the flavour is exquisite, resembling that of a green apricot. When it is about the size of a large nutmeg, it may be made into apple marmalade, or a dried sweetmeat, which rivals the finest Portugal plum.—When fully ripe, it is not only much admired for baking, but is reckoned by some, a good eating apple. It keeps well till February, when properly attended to.

The tree is hardy; it thrives without any particular attention, and may be planted nearer together than most sorts of apples. It does not seem to be subject to disease, and is supposed to be, on the whole, less liable to suffer in bad seasons than other apple trees. If propagated by slips, it generally bears soon, (in the course even of the first or second year); but when grafted, not earlier than other kinds, nor is the fruit reckoned so fine. The best, though not the usual mode of propagation, is by slipping off small branches, which, near their junction with the stem of the tree, put out a sort of excrescence, with half formed roots, similar to that of the apple called *Burknot.* The produce must of course depend upon the size of the tree, and other circumstances; but when the trees are properly treated, they are generally *loaded with fruit*, which ought to be removed *in succession*. Full grown trees will yield from ten to twelve Winchester bushels of fruit, worth from eight to nine shillings per bushel. The fruit is frequently sold by the hoop, which contains in measure, six quarts, and in weight is equal to one stone, fourteen pounds to the stone.

This species of codlin, however, is the better for having shelter, and a rich soil, and likes to be well and frequently manured; at least, it is observed, that those trees which are thus managed, invariably produce the most fruit.

The *Keswick* codlin is an apple of fine tartness and flavour, and may be used early in autumn. The tree is a full bearer, and the fruit is of a good size, considerably larger than the Carlisle codlin; but it begins to decay in the end of November, or begining of December, and consequently it is desirable to have some of both sorts. The Keswick flourishes best in a strong soil.

Potatoes might be planted under these trees, in the gardens of cottagers; but other vegetables so planted, would not probably acquire any size, as is the case usually in such situations.

The trees may be had from the nurseries at Carlisle, Keswick, Hawick, Edinburgh, and Perth; the price is from 9d. to 1s. each. They may be planted at any time from October to March inclusive. They have answered uncommonly well planted singly, against a wall, or as standards, at Jedburgh—in Dumfries shire—Galloway—and in Fife—and in some places even near the sea; and they are likely to be a very important acquisition to Scotch gardens in general, more especially to those of farmers, villagers, and all classes of cottagers.

CHAP. IX. APP. *Art.* (O.)

(Gen. Rep. vol. ii. p. 195).

NOTICE CONCERNING THE CALEDONIAN HORTICULTURAL SOCIETY.

The Society consists of three classes of members, Honorary, Ordinary, and Corresponding. In the first class are included the names of a number of the nobility and gentry of Scotland, distinguished for their attention to horticulture; particularly the Duke of Buccleuch, Marquis of Queensberry; the Earls of Leven, Wemyss, and Kintore; Lords Torphichen, Gray, Ruthven, and Duncan; the Honourable William Maule, Henry Erskine, and Douglas Gordon Halyburton; Right Honourable Sir John Sinclair, Bart.; Honourable Baron Hebpurn; Sir William Forbes, (Fintray), and Sir James Gordon, Barts.; General Wemyss; General Durham, Mr Campbell of Troup, Mr Skene of Skene, and others, to the number of forty. Among the Ordinary members are many distinguished names, particularly Sir James Hall, Bart. P. R. S. Ed., the Honourable George Abercromby, Sir G. S. Mackenzie, and Sir J. H. Dalrymple, Barts.; Drs Duncan, senior and junior, Home, Rutherford, Coventry and Dunbar, Professors in the University of Edinburgh; Messrs Ferguson of Raith, Innes of Stow, Meason of Lindertis, Young of Harburn, Bruce of Langlee, G. Bell of Edinburgh, and many other distinguished horticulturists, to the number of 100 and upwards. The list of Corresponding members includes the names of a considerable proportion of the most successful and experienced professional gardeners in Scotland, who have the charge of the principal gardens in the country.

The funds of the Society depend on an annual guinea paid by the Ordinary members, and on donations received from the Honorary members.

The Society has not yet procured a charter. Its office-bearers are a President, four Vice-Presidents, two Secretaries, a Treasurer, and twelve Councillors, (six of these being amateur gardeners, and six professional), a painter of fruits and flowers, and an experimenter.

In the year 1814, these offices were thus filled:

Duke of Buccleuch and Queensberry—*President.*
Earl of Leven,—Lord Torphichen,—Sir G. S. Mackenzie, Bart.—Dr Rutherford, *Vice Presidents.*
Messrs T. Dickson and P. Neill, *Secretaries.*
Mr A. Dickson, *Treasurer.*
Mr P. Syme, *Painter.*
Mr John Fletcher, *Experimenter.*

Council.

Amateur.	*Professional.*
Alexander Keith, Esq.	Mr John Fletcher.
Henry Jardine, Esq.	Mr John Hay.
James Heriot, Esq.	Mr Alexander Henderson.
John Thomson, Esq.	Mr George Whittit.
George Bell, Esq.	Mr J. Smith, Ormiston.
Dr Duncan sen.	Mr C. Norval, Raith.

General Committee for Prizes.

Amateur.	*Professional.*
George Bruce, Esq.	Mr James Macdonald.
Dr James Home.	Mr Thomas Shade.
Professor Dunbar.	Mr James Stewart.

With the President for the day, and the two Secretaries, *ex officiis.*

Explanation of the Plates,—connected with Chap. IX.

Plate I.—(Gen. Rep. vol. ii. p. 128.)

Fig. 1. Represents the plan and section of the *Peach-house,* generally used in Scotland.

—— 2. The *front parapet* either of a Peach-house or Vinery, standing on arches, so as to allow the roots of the plants free range.

—— 3. Plan and section of an approved Scottish *Vinery,* worked with two furnaces.

Plate II.—(vol. ii. p. 130.)

Fig. 4. Plan and section of a *Pine-stove,* with back sheds, &c.

—— 5. Plan and section of *Succession pine-pits.*

PLATE III.—(Vol. ii. p. 126.)

Fig. 6. Ground plan and vertical section of two divisions of the most approved sort of *Hot-wall* used in Scotland.

——7. Plan and section of a *Green-house*, for general purposes, as constructed by the best Scottish gardeners.

PLATE IV.—(Vol. ii. p. 132.)

Fig. 8. Represents the *Earthen-ware* or *Càn-Flues* mentioned in vol. ii. p. 132, and p. 194.

a. A complete can or piece.

b. The returning end-piece.

c. The bearer on which the joints rest.

——9. Exhibits a vertical, horizontal and longitudinal section of the most approved *Furnace*, vol. ii. p. 194.

CHAPTER X.

Appendix, No. 1.

Of the Ancient State of the Woods and Forests of Scotland.

That Scotland was anciently clothed with extensive and luxuriant forests is abundantly proved by the concurring evidence of tradition, of history, and of the actual remains of their spoils.

Innumerable places, where scarce a tree is now to be seen, derive their names from the circumstance of their having been covered with wood, or from the particular kinds of timber with which they abounded; as *Woodend*, *Woodside*, *Aikenhead*, *Ashyhurst*, &c.

'The great forest of Selkirk, of which scarce a trace remains, existed, as appears from authentic documents, as late as the 12th and 13th centuries, extending over the upper parts of Ayrshire, Lanarkshire and Peebles-shire. The forest of Paisley * seems to have communicated with that of Selkirk, extending, without much interruption, through the higher parts of Renfrewshire, the marches of Ayr and Lanark shires, by Loudon-hill, to near the shores of Galloway.'

The Caledonian Forest, of which the Roman historians speak, appears to have extended, in a southern direction, to the English borders; and in a western, from the boundary of Stirlingshire, by Falkirk and Stirling, (including the higher grounds of St Ninian's, once the royal forest of Dundaff) as far as Gartmore in Perthshire, covering the great moss, called Moss-Flanders, through a tract of about 20 miles. Of this no trace now remains, except Callander-wood, and Tor-wood; unless we trace it, as we may, in the deep mosses, from 6 to 9 feet under the surface, incumbent on the clay, its original soil.

Many other instances of ancient forests, long since lost, might be given from authentic records.

In all our mosses, from 20 feet above the level of the sea, to 500, and even 1000 feet above that elevation, the remains of trees of a much larger size than any which now exist in a growing state, are found in abundance. In the northern mosses these are principally of the pine tribe. To the south of the Forth, it

---

* As late as the years 1460 and 1524, the tenants of Dunscaith-wood, near Paisley, were bound by the Abbot 'to keep the wood or forest, and to uphold 'or repair the dyke round the forest.' See Mr Aiton's Inquiry into the Origin of Moss, p. 37.

does not appear that the fir ever grew spontaneously. The oak is, in that district, to be found every where embedded in the mosses. In Dalserf parish, in Lanarkshire, an oak was lately dug up, 65 feet long, which is so straight, and so equal in girth, that it is difficult to determine which is its root end.[*] In Moss-Flanders, innumerable trees of the same kind occur.[†]

Even the Hebrides, exposed as they are, to the sea blast, present venerable remains of ancient forests. 'A yew tree, which grew on a sea cliff in the stormy island of Bernera, when cut into logs, loaded a large boat. The island of Mull has anciently been filled with woods.'[‡] 'Though Lewis' adds Dr Walker, 'is now entirely destitute of timber, there are large trunks of Alder, Birch, and especially of Scots Fir, found in its extensive mosses.'

Athenæus furnishes us with a very curious document in regard to the size to which trees grew, at a very remote period, on the mountains of Britain. The celebrated Archimedes had built a ship of a prodigious size, at Syracuse, about 200 years before the Christian era. 'This ship had three masts, of which the second and third were got without much difficulty; but it was long before they could find a tree fit for the first, or main mast. This, at length, was discovered on the mountains of Britain; and brought down to the sea coast by machines invented by one Phileas Tauromenites, a famous mechanic.'[||]

Of the destruction of these magnificent forests, we are furnished with too satisfactory an account, both by history and observation. Herodian and Dion Cassius inform us that the Emperor Severus, about A.D. 207, employed the Roman Legions, with the auxiliary troops, and such of the natives as were under his control, in cutting down the forests of Scotland; an undertaking in which, the historian tells us, he lost no less than 50,000 men. The forest that once covered Moss-Flanders, to the west of Stirling, appears evidently to have been thus cut down: the prostrate trees lye under the moss in every direction, which demonstrates that they have not been overthrown by storms, which would have laid them down uniformly.

At a later period, John Duke of Lancaster set 24,000 axes to work, at one time, to cut down the woods of Scotland.[§] In the northern parts of Scotland, the Danes cut down, and burnt many woods.[¶] King Robert Bruce, in his expedition against Cummin destroyed some forests near Inverary.[*]

---

[*] Mr Aiton's Inquiry.

[†] See Stirlingshire Report, p. 40.

[‡] Dr Walker's Hebrides, p. 205, 279.

[||] Athenæi Deipnos. Lib. V. 10. cited by Dr Henry in his history of Britain, B. I. ch. 6.

[§] Evelyn on Forest Trees, p. 565.

[¶] Stat. Acc. vol. III. p. 379.—ib. V. p. 103.

[*] Fordun, V. 2. See, for a more enlarged account, Aiton's Inquiry concerning Moss, p. 32.

The professed purpose for which these lamentable devastations of our beautiful forests were committed was, to deprive the natives of their strongholds, and thus to facilitate the subjugation of the country.

The Reporter has now before him an original document, handed to him by Mr Cuninghame Graham of Gartmore, relating to the woods of Aberfoyle, now the property of the Duke of Montrose,—formerly of the Earl of Menteith and Airth. It is an order of the celebrated General Monck, then in the service of the Commonwealth, to cut down these woods. It is *literally* as follows.

' Whereas the woods of Milton and Gleshart in Aberfoyle ' p~ish are great shelters to the Rebels and Mossers, and doe ' thereby bring many inconveniencies to the country thereabouts; ' These are to desire you, on sight hereof, to give order for the ' cutting downe of the said woods with all possible expedition, ' that soe they may nott any longer be a harbour or shelter for ' loose, idle, and desperate p~sons. And hereof you are nott to ' fayle. Given under my hand and seale, at Cardrosse, the 17th ' day of May 1654.

' To the right Ho^{ble} the GEORGE MONCK.'
' Earle of Earth.

Besides these depredations committed by the hand of man, many extensive woods have been lost by neglecting to enclose them properly. Instances of this have occurred on the Perth estate within these 40 years. Where cattle, and especially sheep, abound, as they do in the Highlands, no forest that has been destroyed can ever renew itself.

CHAP. X. APP. NO. 2.

REMARKS ON PRUNING FOREST TREES.

By ARTHUR YOUNG Esq. in a M. S. Communication to SIR JOHN SINCLAIR.

' I have read of Pruning Oak with the deepest concern. I ' have long been perfectly convinced that it is pernicious; and ' those writers who recommend it would do well to consider what ' pruning those trees received 200 or 300 years ago, which, in first ' and second rates, have contributed to render the Flag of Britain triumphant through every part of the globe where sea is to ' be found. The experience alluded to, in support of the practice, is that of the lives of men who have published these books. ' It is nothing; nor do we know that their pruning system ever ' produced one capital oak.

' I had the management, for many years, of a small estate in ' Suffolk, very well timbered with fine oak; and as I inherited ' the same property, my experience, upon the whole, on that

‘ spot, is not less than 50 years. While it was in the hands of my mother, she made many falls of oak timber; and as the trees were generally sold to a carpenter residing on the estate, I had an opportunity of seeing all defects. This man was a careful and attentive observer, and his experience ran 30 years beyond mine. Many a time has he walked into the Hall, to desire me to go and see some of the oaks that were sawing out, —in order to prove the horrible mischief that resulted from every species of lopping, pruning, and priming,—never a system in that country, but the mere effect of accident, or rural plunder; and he has frequently conjured me, when he saw me forming some plantations, and sowing the ground with acorns, never to permit a tool of any kind to be used in pruning. When the tree is *young*, it forms a rotten knot, often grown over with sound wood; and at *every age*, some mischief of that kind is likely to ensue. And he added—Look at the oaks in the two Pakers, the Arderey, the Grove, and Strawberry, and consider what pruning they received.—He would conclude with wishing that every man who pruned an oak was pruned himself.”

Speaking of oak for the Navy, Mr Young proceeds to say— ‘ Are transplanters, and pruners, and the diggers up of trees with balls of earth, to have free admission into 2000 or 3000 acres of oak, with perquisites resulting from the pruning-hook? —I am petrified at the thought of such management.’

CHAP. X. APP. No. 3.

DESCRIPTION OF THE PRUNING CHISEL, USED AT LORD GRAY'S IN PERTHSHIRE, AND AT MR MUIR'S OF CALDWELL, IN AYRSHIRE.

(From the Derbyshire Report, p. 301–2.)

THE chisels used by Mr W. Campbell, Lord Gray's gardener, are kept for sale by Messrs Dickson & Browne, nurserymen at Perth: they are three inches and a half broad in the blade or cutting edge, and not more than seven or eight inches long, including the hollow socket to receive the handle; the flat or chisel part, does not exceed two inches and a half in length, and is about three-eighths of an inch thick near to the socket; and the whole weighs about a pound and a quarter. The blade is stoutly bevelled only on one side, and the cutting-edge is carefully made to coincide with, or cross the axis of the socket, and of its wooden handle. These *handles* are made of straight, clear, or knotless pieces of foreign deal, five to twelve feet long, and cylindrical, except where they enter the sockets of the chisels; which socket is one inch and a half diameter inside at its mouth, the remainder of the handle being two inches diameter, or as large as a man can well grasp in his hand: the lower end of the handle is sometimes hooped; but it is better to have a ferril, or cylindrical socket of iron for it, nearly the size of the wood on the outside.

The *mells*, or wooden mallets or beetles, are made of hard oak or beech, not too clear in the grain, ten inches long in the head, and six inches diameter, with handles two feet eight inches, or three feet, long. Sometimes the mell is hooped at each end; but with tough twisted wood and careful use, this has been dispensed with; and the labour of carrying and swinging it is somewhat reduced.

In the experiments which I saw, Mr Campbell himself held the chisel, grasping its handle fast in both hands, that it might not dindle or jar. In favourable situations, the edge of the chisel, with its bevel downwards, was placed directly under, and inclining towards the branch; but where there appeared danger of cutting the stem beyond, the ground did not suit to stand, or the branch grew askew from the stem, in these cases, the chisel's edge was applied obliquely upwards, (as it was also, even to horizontal, with very low branches), with the arras or cutting edge turned towards the tree; care being taken, in all cases, to present its edge as near as possible in the plane of the intended cut.

The chisel being thus carefully placed and held, so as to present the lower end, and about a foot in length of the handle next it, in the most favourable position for the assistant, called the Cawer or *Driver*, who used his mell with an over-hip, or underhand swinging stroke, being very careful to strike fair and exactly in the direction of the handle and cut, and with the requisite degree of force, according to the size and hardness of the branch to be severed, &c.; but sometimes, for horizontal branches, he strikes forwards and upwards with his mell. The dexterity, safety, and certainty with which these apparently difficult and dangerous operations were combined by Mr C. and his practised assistants, much surprised me, and gave much appearance of probability to his assertions, that while a saw-pruner was placing his ladder, and mounting to a branch between six and sixteen feet high, that he would most effectually sever it by the chisel and mell.

The Kinfauns' plantations and woods having been previously much neglected, branches sometimes wanted amputating from the trunks of young and thriving trees, which exceeded the width of the chisel in diameter. In these cases Mr C. sets in the mouth or edge of the chisel on one side of the lower part of the branch, so that in driving it through, the corner of the chisel may come fairly out to sever the bark, and not leave it to be torn; and then places the chisel anew to complete the severing of the branch, being careful, in case the width of the chisel will not completely effect the cut at the second operation, (so that no bark is torn), to take previously a narrow middle cut, to bring the remaining wood within the breadth of the chisel: and I was pleased to see, in these operations, how well large and heavy branches supported themselves without any holding, until the chisel was ultimately driven quite through, and that then they bounded off from the tree, so as little to endanger the men by their fall; and with care in this respect, no accident of the least consequence had happened to Mr C. or his men in several years practice.

As it sometimes happens that the different cuts of the chisel are not made in the same, or not in the proper planes; in such cases, Mr C. afterwards pares or smooths them, by using the cutting edge of the chisel downwards or towards the tree, and by very slight strokes of the mell: The cut is thus, often, more properly left with a *curving surface*, than *in one plane* surface, as a saw must unavoidably leave it.

Mr Campbell says, that with longer handled chisels he could prosecute the pruning or clearing of the stems, higher than is mentioned above, equally well and more expeditiously than with the saw, but which instrument he still highly values, for pruning the higher parts of trees. The advantages and limits of the uses of the *chisel* compared with the *saw*, in pruning, seem to me, from the above observations, to be highly worthy of comparative and more decisive experiments, to be made under the superintendance of a Committee from the Highland Society, or the Board of Agriculture, and that handsome premiums to the most effective and economic pruners, of sufficient extents of plantations, under different circumstances, might go farther to remove the present lamentable and disgraceful state of neglect and ruin, in which the woodlands of Scotland seem almost universally found, than any other step that could be taken.

CHAP. X. APP. No. 4.

Letter from WILLIAM ADAM, *Esq. to* SIR JOHN SINCLAIR, *Bart. President of the Board of Agriculture, respecting the Plantations and other Improvements of the Estate of Blair, in the County of Kinross.* *

London, 20th November 1794.

DEAR SIR,

In compliance with your request, I sit down to have the pleasure of communicating to you some particulars respecting the plantations and other improvements of the estate of Blair, which, if you think they can at all tend to promote the important objects of the Board of Agriculture, may either be incorporated with Dr Coventry's Agricultural Account of Kinross-shire, or annexed to it by way of Appendix. Indeed, had it not been for the suggestion of Mr Kent of Fulham, whose capacity and intelligence, respecting all subjects of improvement, stand too high to need any encomium from me, I should not have thought my observations worthy of recording. Happening to mention them to him in conversation, he said, that they should be sent to the Board of Agriculture; since it is by persons communicating their observations where they are likely to be preserved, that knowledge upon such subjects is accumulated, and improvements promoted.

---

* It is judged proper to preserve this paper in the Appendix to the chapter on Woods and Plantations, as it contains, within a small compass, much important information regarding these interesting subjects.

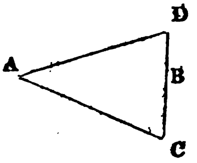
Situation, &c.—The estate of Blair lies ten miles north of the Frith of Forth. The great road from Edinburgh to Perth, passes through it for about one mile and a quarter; a small part of the estate, *viz.* 262 acres (Scotch measure), lying on the east, and 3050 acres on the west, of the road. That part of the estate which is to the east of it, is in a low flat situation, and wholly arable: but the other and larger portion, partakes somewhat of the nature of a hill estate; especially the westmost extremity, which forms a part of the Cliesh-hills, and is on their eastern boundary. This western and hilly division consists of some ground covered with heath, of green rocky hills, of banks and meadows very fit for pasture. About the centre of the estate, there are many rocky eminences, and fields suited for pasture, but too steep for the plough. The northern and southern extremities, and that part of the lands of Blair, which lies immediately to the west of the high road, between it and the mansion-house, are fit for the plough. However, from the nature of the soil, climate, latitude, and elevation, the estate, in general, is to be considered as calculated rather for grazing cattle, than for the production of grain: and accordingly, it is chiefly employed in the former of these ways, there being not more than 500 acres under tillage. The site of Blair-house is about 170 feet higher than that of the town of Kinross. The grounds behind the house, in some places, are pretty steep, and in others abrupt, but generally rising with a gradual ascent; and many parts of the land, where there are very thriving plantations, are even from 200 to 250 feet higher than the situation of the house. The height of Kinross above the sea, is estimated at about 340 feet; so that the plantations of Blair, are, in many places, 550 feet above the level of the sea. The height of the plantations is a consideration of some importance in the detail, because there cannot be a greater encouragement to the planting of exposed grounds, in very elevated situations, than what is afforded from the prosperous state of those at Blair.

The nature of the improvement on the estate of Blair.—The great, and, I may say, the only improvement which has been attempted on the estate, is enclosing and planting. As far as I can collect from family papers, my grandfather began that species of improvement, at some time between 1733 and 1738, and continued it till his death in 1748. He carried it on according to the fashion of the times. The fences were stone-walls; the strips of planted ground were very narrow, and in straight lines; and the trees which he planted round the house, were disposed in the regular form of squares, circles, and triangles, without any regard to the shape and diversity of the ground. His enclosures might extend to about 1000 acres, and his plantations to 30 or 40. After his death, my father continued the same species of improvement, but upon a much more enlarged scale: endeavouring, in all his plantations, to adapt their form and extent to the nature and variety of the ground; and planting (with some exceptions produced by the desire of effecting continuity in the woods) those hills and rocky eminences only, which were calculated for nothing so well as trees, being at that period not very valuable in grass, and incapable of culture by the plough. He continued his operations till 1784, a period of thirty-five years. When he left off, there were 540 acres planted; and since then, little or nothing has been added. These plantations, appearing in large distinct masses, partly surround, and partly cover a portion of the estate, as I compute, of 2340 acres; the rest of the land remaining in its original condition, neither enclosed nor planted. The wood on these 540 acres consists of pines of all sorts, oaks, ashes, beeches, and elms, with some few planes and limes: and the number of the oaks, ashes, and elms, will, when the nursing trees are thinned out, occupy the whole space that is planted. There are at present, 540 acres of trees, 1200 acres of grass-enclosures, 600 acres under culture, and 972 acres on which nothing has been done. To complete the original plan, would extend the plantations to 60 acres more than are now planted, and render the whole a complete and effectual system of shelter, by the judicious intermixture of field and wood. This I hope to accomplish. But my immediate attention is directed to preserve, with all possible care, what has been executed with so much judgment and spirit by those who have preceded me.

Shelter.—From the mode of planting adopted by my father, (the grounds being varied with numerous little hills and rocky eminences, as well as various glens and valleys), there has resulted the most perfect degree of shelter that trees can give. The varied lines of wood breaking the current of the wind from every quarter, and the cattle finding shelter, in every field, from every wind that blows, are advantages that have, in my opinion, compensated for the additional length of fencing which that mode of planting necessarily occasioned. The climate has in this way been improved; and hence, though the soil has received no improvement from liming, draining, or other culture, yet in the spring the grass rises much earlier, and in the autumn continues fresh much later, in these enclosures, than on the exposed grounds in the neighbourhood. The 1200 acres of grass-land are let from year to year; and the rents have been uniformly increasing. After an experience of thirty years, this circumstance becomes a sufficient proof of the solidity and certainty of the improvement.

The actual and probable gain or advantage.—I consider that the increase of rent has been much beyond what that rise would have been by the mere effect of time, and alteration in the value of money. It is five-fold what it was forty years ago. If the whole of the land had been left in a state of nature, the rent would, I suppose, have been increased in the same, or nearly in the same proportion as the land-rent in other parts of Scotland. Mr Dempster, I observe, considers doubling in 50 years to be the state of land in the county of Forfar. The additional rise is to be ascribed to enclosing and shelter. As far as I am able to ascertain the cost of these improvements, I am within bounds when I state that the extra-improvement of rent affords 7 *per cent.* for the money laid out upon enclosing and planting: and in this statement of the annual increase, I reckon nothing for the profit arising from the annual thinnings, which are yearly increasing; nor do I set any estimate upon the accumulating value of the great body of the wood. The plantations may be distinguished as follows: *viz.* 50 acres of *ornamental* wood, growing near the house, and not yielding any profit but what arises from the thinnings; 30 acres, in narrow strips and small patches, where, it is probable, the value of the produce will not repay the expense of forming anew, or repairing, their fences; and 460 acres of wood, to be cut for profit, in regular succession. I have a right therefore to look forward to this as an inexhaustible source of gain, in addition to the advantage arising from the land-rent: and I take the liberty of stating those things to you, because there can be no greater encouragement to this species of improvement, the most important which our country can receive.

Manner of planting.—The plantations, at first, were not conducted with that skill or knowledge which experience afterwards gave; and consequently, their progress was slower, and they repeatedly went back. This was the case from 1749 to 1769; but, from this last period, there has been scarcely any failure; and the plantations, in all exposures, have flourished with great luxuriance. The mode practised from 1769, with so much success, has been, first of all, to fence completely and sufficiently; and then, to drain thoroughly, wherever there was occasion. The plant, according to the usual mode in Scotland, was placed in a pit, which, instead of being dug out and left open, was made, at the instant of planting, in the following manner: the labourer, with two cuts of his spade, raised up and folded back an angular piece of turf; and after the under-ground had been moved and loosened by a trowel, so as to enable the tender fibres of the root to penetrate the ground, the plant was inserted, and its roots separated properly in one of the cuts, and the piece replaced and made firm, so as to prevent the wind-waving of the plant; as may be easily understood by the following figure.



A D and A C may represent the cuts made by the labourer, and B where the ground is left entire or uncut. After the piece D A C has been folded back, and the earth moved, the plant is inserted either in the line or cut A D or A C, and its roots spread: The turf is replaced, and trodden firmly down.

The distance in planting has been three or four feet, according to the exposure. Next to wet soil, one of the greatest obstructions to the growth of the trees, has been the shaking of the roots by the wind. This, when the exposure happened to be to the south-west, had greatly retarded the growth of many of the early plantations. To obviate this, it was thought that it might be of advantage to plant the tree obliquely, with its top to the south-west, the quarter from which our longest-continued and most violent winds blow. This has accordingly been done, in several instances, with great success: and even in one of the most exposed situations, not a single tree has been observed to fail. Almost all of them are thriving. In five years from the time of their being planted, they came all into the upright direction: and I cannot help thinking, that their success was very much owing to the directing of the plants in the way mentioned. For if a tree is planted upright in such an exposed situation, the wind, making an impression upon the branches and stem, laterally waves it backwards and forwards, and shakes it at the root. But if the apex be presented to the wind, it can receive no injury from waving, but the effect must be, as it were, to drive it deeper into the earth. This being the case at first, for two or three years, the root, in that time, gets fast hold; and when the tree, by its natural propensity to seek the upright direction, has at last gained it, all danger from wind-waving is over. I would therefore strongly recommend this in all such situations as I have described, it being of great importance to find any expedient which may counteract that great enemy of trees, the south-west wind. By this means, you can rear an outward screen against it, which resists the wind, and tends very much to the shelter of the interior plantations. I have had occasion to contend with no other exposure so much as the south-west. But if I had to struggle with any other, I would, by the same expedient, turn the top of the tree to that wind which was likely to injure it most.—I have remarked, that, for the first year or two, the progress of trees, so planted, is slow, and by no means like the vigorous shoots which are often seen in this country the very first summer after planting. This I take to be owing to several causes; but chiefly to the mode of planting in pits, by which the plant cannot send forth its roots with such ease as when the ground is previously ploughed or trenched. That, however, is an evil which cannot well be remedied; as, in most cases, the places to be planted cannot be ploughed, owing to the ground being rocky and uneven; and trenching would go beyond all bounds of expense.

The sorts of trees which answer best.—I may safely say, that, with the exception of the Scotch fir, I have found all the various trees that have been tried succeed perfectly well, and many of them grow with a degree of vigour and luxuriancy that is not exceeded any where in the island.

The tree which, with me, grows the fastest, beyond all comparison, is the larch. I measured many larches, this last autumn, planted in the year 1769, which were four feet and a half in circumference, at the height of four feet from the ground: and some of those which were cut down in thinning, had in them about two-thirds of red wood. In 1792, I cut down, in thinning, many which were planted in 1771: and all of them were sold for what we call couples. Each tree, being sawed in two, from end to end, made two rafters or half-couples, sufficient for the roofing of cottages, barns, &c. The spruce of all countries, and the silver-fir, grow well with me likewise. The New-England pine flourishes, and indeed grows rapidly, in all exposures, for 26 or 30 years, and then decays, becoming both ugly and useless. The Scotch fir uniformly fails in all exposed places. Those Scotch firs which were planted by my grandfather, in low sheltered situations, have become very valuable trees: those which were planted by my father, in the high exposed situations, however good or dry the soil, have many of them died, and none of them have thriven. On which account, his early plantations, where he trusted to the Scotch fir as nurses, were very much retarded. The forest-trees, of all sorts, grow luxuriantly; and even the oak rises faster than in many other places. The beech, elm, ash, and sycamore, grow rapidly. There are more of the forest-trees planted than will fill the ground when the fir-tribe is thinned out;—indeed I believe the oaks alone, were they only encouraged, might do so. The greatest discovery for Scotland, in the way of planting, is the larch. It is known now to suit all exposures and soils, and to be a very useful tree. The common people, in my neighbourhood, have got over all their prejudices against it, and prefer it to their old acquaintance the Scotch fir. Indeed, of all the pines, it is the most durable, and is equally suited to all uses: for it bears wet and dry equally well; and, what is more, it bears being sometimes wet, and sometimes dry, better than any other tree. I have observed too, that it grows well and readily by the shedding of its seed. One of my plantations, planted in 1763, contains a considerable proportion of larches. There were left in it large vacant spaces, to answer the purpose of ridings, and of bringing out the wood, when there should be thinnings. In those vacancies, there are many young larches, growing most vigorously: and as I am sure none were planted in it, they must be self-sown from the seed of the adjacent trees. It is worthy of remark too, that horses have been permitted to graze in that plantation; and the young larches bear no mark whatever of having been injured by them. Black cattle have been excluded, as more likely to do mischief.

The best trees for nursing others.—From what I have already mentioned, it is natural to suppose, that the planting of the Scotch fir has been entirely given up. And the good effect of that measure has been found in the growth of the plantations of later date.

The larch being deciduous, is not a good nurse; and, from its quick growth, it is probable, that it is a great robber of the nourishment of other trees. From my own experience, I have no hesitation in saying, that the spruce is to be preferred beyond all the other trees as a nurse. I have thousands of instances of oaks and elms growing up uninjured in the bosom of spruces. The fact is most material; and reasoning at the same time supports it. The deciduous trees which I have mentioned, send their roots downwards, particularly the oak. The spruce spreads its roots on the surface. Their nourishment is drawn from different sources. And the longer the oak grows, the more it derives its nourishment from a depth; consequently, the less it interferes with the spruce. This last rises in a regular and very pointed cone, so that it leaves full space for the spreading top of the oak. The spruce is thickly leaved, and its branches of a strong unpliable nature; consequently, it gives much protection, and does little injury to its neighbour: and is very much feathered and bushy at the root, so that it protects the forest-tree from being wind-waved. The larch, on the contrary, is naked of leaves during the worst of the season. Its boughs are thin and pliable. It lashes the neighbouring tree unmercifully; and is in a condition, from its nakedness, to make every lash be felt just at the time when its neighbour begins to spring: and it has no peculiar thickness at the bottom, to protect the other from wind-waving. It might be supposed, that the silver-fir would make as good a nurse as the spruce. In point of fact, I have not observed that the forest-tree grows so kindly with this as with the spruce: and it may be observed, that the silver-fir is not so thoroughly leaved as the spruce. The sides of the bough only are covered with leaves: and the tree itself is not so well clothed, especially near the surface of the earth.

Trees covered with moss.—Nothing is more disagreeable to the sight, or more injurious to the tree, than moss. It is the effect of damp; consequently, wet soil, too much thickness in the wood, and damp strong grass, tend to produce it. It seems, in most cases, to be generated over the tree, from a collection of it first formed at the root: and I am sure, from my own experience, that this has originated from a strong, wet, matted grass being permitted to grow rank in the plantations, and having its bad qualities increased by the loppings which I am under the necessity of leaving to rot in the wood. The cheapness of coal in the neighbourhood, makes it ruinously expensive to carry away those loppings. Where this thick grass does not exist, but the grass is cut, and the wood kept clear and well thinned, no moss appears. Where the case is otherwise, the moss has grown in some instances, but never till the tree has arrived at the age of 20 or 25 years (unless the ground has been damp, and not sufficiently drained); and then it has uniformly begun by a quantity of moss gathering at the root, which, having been allowed to remain, has, in the course of years, overspread the whole tree. It seems to me, that the nourishment required to supply the vegetation of the moss, is a great impediment to the growth of trees; for I have had the moss scraped off, and the progress with which the trees have increased, after that operation, has been astonishing. This is performed by an instrument like an hoe, made concave, to suit the shape of the tree. My father had it made with teeth, like a curry-comb; but I think the plain one is better. In addition to this, there should be an instrument like a rake, with only three or four large prongs, to draw away the collection of moss and grass at the root of the tree; and then both the moss, and the chief cause of it, will be removed, and that too at a very cheap rate. This work may be performed by an old man, who can labour at nothing else. The wages of such a person are, with me, from 6d. to 8d. a day. He can clear a tree from moss, of 20 feet high in the stem, and 18 inches diameter, in ten minutes; that is to say, at the rate of six in an hour: and supposing he works only eight hours in a day, that is 48 trees a-day. But I will suppose the number of trees a-day to be only forty, and the wages of the labourer 1s., and that he works only 200 days of the 365, this will make 8000 in a year, cleared of moss, for 10*l*. Any person who has occasion to try this, will find the expense amply repaid by the extraordinary improvement which it produces in the growth of the trees: and if the soil be thoroughly dried, the trees kept properly thinned, and the moss and matted grass removed from the roots of the trees, I am almost sure that they will be no longer infested with moss; for it is not caused by the atmosphere, otherwise it would be universal; whereas I find it, with me at least, to be but partial.

Thinning.—From the state of my plantations, thinning is now the greatest and principal object of my attention. For this, I have no general rule but one, which is, gradually and safely to cut out the pines, and bring the whole woods to forest-timber; because the pine, being but a tenant for life, when once cut down, never rises again: but the forest-tree, if due attention is paid to the fences, gives an estate in fee-simple, rising again and again from the stool; and the older the root, the more vigorous the growth. Where the firs and forest-trees have got up together, I gradually cut out the firs; but where the firs have over-shadowed and choked the forest-trees, (of which frequent instances occur, when the Scotch fir has been used as a nurse), I then cut the firs out in patches, thereby forming vacuities of 30, 40, or 50 feet diameter; and leaving a thick fringe of firs round those open spaces. The choked forest-trees being thus relieved from the noxious drop of the overshadowing fir, rises rapidly; and the rapidity of their growth is much increased by stubbing the choked tree; for it will sooner be a tree, if cut over, than if left to grow from its choked decrepit shoots. When the forest-trees, in those apartments, rise to be out of danger from wind or cold, and to be themselves a shelter, then the surrounding firs will be cut down; and the forest trees, sheltered by their neighbours then grown up, will get on, and the whole become gradually a wood of forest-trees. As all my plantations were originally well stocked with forest-trees, cutting away the firs in this manner is the only thing requisite to be done. But, those gentlemen who have fir-wood only, may gradually obtain forest-timber, by clearing out spaces in their fir-woods, and then planting those spaces with forest trees. When these have grown up, the remaining firs may be removed in large patches, which are to be filled up with forest-trees. But if the forest-trees are planted among the firs, and the latter only gradually thinned, the former never will rise. Want of air, and the drop of the firs, will keep the forest-trees for ever in a depressed condition.

This mode was suggested to me by the following circumstance. Some Scotch firs were cut down to open a prospect, and by that means there was formed an apartment of 20 or 25 feet diameter. After an absence of ten years, I found the view again obstructed, occasioned by the growth of the forest-trees, which had risen thus rapidly, in consequence of the removal of the firs; while the choked forest-trees, left among the firs, immediately adjacent to them, remained in their original stunted condition: and yet those very firs had been gradually and properly thinned.

The number and state of the Inhabitants.—It has been, I think, the very mistaken policy of many landholders to dislodge their cottagers. This policy has extended to my neighbourhood. Kinross, the principal town in the county, has been increased by it; but the community is injured. It enhances the price of labour; and does not, I think, promote population, or render the labouring man more happy: for there is no state in which persons of that rank are so happy, as when under the immediate protection of their superior. It was a great object with my grandfather and father, to encourage population on their estate. Besides the utility of it, in having the command of labourers, and in increasing the rents (for almost every labourer settled on the estate pays a fair, good rent for the little bit of land which he possesses), they found infinite pleasure in having an estate well stocked with inhabitants. My plan, therefore, is to follow out this example which has been set me, by endeavouring to increase, instead of diminishing, the inhabitance of the place.—At present there are 26 inhabited houses in one village, of which I am the proprietor; 5 property-houses, and 12 feus, in another; and of cottages scattered over the estate, there are 20. Among these, I do not include farm-houses, nor the moorland people; but confine myself to that part of the estate which I described as being either adapted for culture or grazing: consequently, this population consists, in all, of 62 families: to which I should add, the family of a bleacher, who rents a small bleaching-ground.—The number of acres, thus inhabited, amounts to 2300. These inhabitants are, with the exception of some widows, whose husbands were formerly cottagers, married persons, having families of children that may be reckoned each, at an average, four in number, all the most orderly, best disposed people imaginable.—The occupation of the greater number is that of labourers.—There are some weavers, and handicraft people, such as smiths, carpenters, masons, a baker, shoemakers, tailors. They have each a garden, included in the rent of their houses. The rent they pay is from 15 to 20 and 25 shillings a-year. By this there is no profit; nor do I suppose there is any loss: for with the ease and readiness with which I am supplied with wood, the expense of repairs is not very burdensome. They all, without exception, keep each a cow, many of them two; and where they are collected together in the villages, a field, or fields, are appropriated for their cows. Where they are scattered about, it is made a condition, in the annual letting of the fields, to reserve a cow's grass or two for each cottager. They pay, in general, 20s. a-year for a cow's grass; if the pasture be rich, somewhat more: and this I find to be a very competent rent. My intention is, to increase the scattered cottages; for the residence of the cottagers, in different parts, is a great means of protecting the fences and plantations, both from the cattle and intruders. I mean to build them in pairs for mutual protection, and to make the following improvement in the distribution of the premises; viz. putting the cow-house and dunghill behind, and the garden in front, close before the door. This, if they have any turn at all for neatness, will give then an opportunity to exercise it; and if they have none, it will exclude the common nuisance of our Scotch cottages, the dung and filth in front. I found this upon the experience of a few instances, at a village where I have let, on building-leases, some parcels of ground for cottages, at St Cyrus, in the Mearns, on the road from Montrose to Bervie. The distribution is upon the plan which I have just stated; and the consequence is, that there is an emulation for neatness: and every cottager has his garden laid out in little walks, rose trees, and flowers on the border, and his pot-herbs in the squares within. This is a plan which seems to me not to have been attended to; and it strikes me as likely to be very conducive to that neatness and cleanness, which is not only pleasant to see, but is productive of health and enjoyment.

I have now closed a long, and, I am afraid, very tedious letter, which I suspect will not convey any information of much importance; my knowledge being obtained merely in consequence of very interrupted, though anxious observation, given to a subject which I regard with reverence, and in the prosperity of which I feel a very deep interest. My chief pursuits, and the ordinary place of my residence in consequence of them, have, in a great measure, prevented me from studying the subject from books, or from gaining much practical knowledge upon it, beyond the occasional experience derived from my own particular place. I may therefore be stating things which are universally known, and already recorded by the experience of others. But if you can draw, from the observations which I have communicated, any thing that is in itself new, or that will serve to encourage a species of rural improvement, which is attended with so much advantage, beauty, and comfort, as judicious planting, it will give me very great pleasure and satisfaction.

I am, dear Sir, yours most faithfully,

WILLIAM ADAM.

CHAP. X. APP. No. 5.

The Annual Increase of the Trees at THE BURN, *the Estate of* ALEXANDER BRODIE, Esq. *in Kincardineshire, for a period of Eight Years. Measured 27th October yearly.*

Girth taken Four Feet from the Ground.	1805.		1806.		1807.		1808.		1809.		1810.		1811.		1812.	
	GIRTH.		GIRTH.		GIRTH.		GIRTH.		GIRTH.		GIRTH.		GIRTH.		GIRTH.	
	F.	I.	F.	I.	F.	I.	F.	I.	F.	I.	F.	I.	F.	I.	F.	I.
No. 1. Ash tree in front of house	1	3½	1	4½	1	5¾	1	7⅛	1	8⅛	1	9¼	1	10½	1	11¾
2. Ash in front of ditto	1	6	1	7	1	8	1	9	1	10	1	11	2	0.	2	1
3. Ash in front of ditto	1	4	1	5	1	6	1	7½	1	7¾	1	8½	1	9½	1	10¼
4. Ash in front of ditto	1	4	1	5	1	6¼	1	7¼	1	7¾	1	8¾	1	9½	1	11½
5. Ash in front of ditto	1	2½	1	3½	1	4	1	5	1	5½	1	6	1	6¼	1	7½
6. Ash in front of ditto	1	4½	1	5½	1	7	1	7¾	1	8	1	9	1	10¼	1	11½
7. Ash in front of ditto	1	2	1	3	1	3¾	1	4¾	1	5¾	1	6¾	1	7¼	1	8½
8. Beech, by Ash No. 5.	—		1	5¾	1	6½	1	7½	1	8½	1	9½	1	10¼	1	11½
9. Beech, bottom of Bank south of steps	—		1	7¾	1	8½	1	9½	1	10	1	11	2	0½	2	2
10. Oak, right of broad walk	—		1	5¼	1	6¼	1	7¾	1	8¾	1	9½	1	10½	1	11¾
11. Birch, bottom of broad walk	—		1	5	1	6	1	7⅛	1	8	1	9	1	10	1	11½
12. Birch, south side of the above	—		1	1	1	2	1	3	1	3¾	1	4¾	1	5¾	1	6½
13. Oak in the corner of low meadow	—		1	2½	1	3½	1	5	1	5¾	1	6¾	1	8	1	9
14. Beech, on bank south of Dial	—		1	6	1	6¾	1	7½	1	8	1	9½	1	10½	1	11½
15. Mountain ash, front of stable	—		1	6	1	7¼	1	8½	1	10	1	11	2	0¼	2	2
16. Birch, north of new garden	—		2	0	2	2	2	3	2	4	2	5	2	6½	2	6¾
17. Larch, by ditto	—		2	1	2	5	2	7	2	8	2	9	2	10	2	10¾
18. Larch, south corner of low plantation	—		—		2	5½	2	7	2	8	cut.					
19. Beech, in low ground, west of Dial	—		—		—		2	1½	2	2½	2	3½	2	4¾	2	6
20. Beech, S. W. corner of low meadow	—		—		—		2	0	2	1	2	2¼	2	3¼	2	4¾
21. Larch in Torehill, by cottage	—		—		—		—		—		4	1	4	3¼	4	5
22. Larch east of ditto	—		—		—		—		—		3	7½	3	8¾	3	10
23. Scots Fir, N. E. of ditto	—		—		—		—		—		2	7½	2	9	2	10½
24. Larch at Gannachy Bridge	—		—		—		—		—		3	1½	3	2½	3	4
25. Oak, N. E. of No. 13. in low meadow	—		—		—		—		—		—		2	1	2	2

N. B. The Trees here measured were planted out in 1782 and 1783,—29 years from this period.

The above Measurements were taken under the inspection of LIEUT. COL. IMRIE.

Chap. X. App. No. 6.

The following very accurate measurement of 13 Timber Trees in the Lawn of Callander, near Falkirk, has been obligingly communicated to the Reporter by William Forbes, Esq. the proprietor. It will appear, upon inspection, that all the *measureable* timber, that is, all that squares 6 inches, is calculated. The solid, or cubic feet, are given, at the various *lengths*, both of the *trunks* and *branches*, that are *measureable*. The column on the left hand, accordingly, shows the *lengths* in feet, in the different dimensions taken:—the column on the right hand, shows *one-fourth* of the *circumference*, in inches and half-inches. The cubic contents of each tree is added at the bottom. It is confidently hoped, that this will appear to be an important *document*, regarding the *Timber* which *is*, and which *may be*, produced in Scotland.

No. 1.—ASH.

Lengths in feet at different dimensions	¼ of circumference in inches & ½ inches.
6	38½
25	17½
6	11
11	7½
10	16
8	7½
11	18
11	12
6	6½
13	8
8	16
14	10½
14	8½
15	8
12	17
13	9
10	8
15	6½
8	8½
3	19½
11	13½
11	9½
8	7
15	11½
11	9

The contents in solid feet
310 feet $2\frac{8}{12}$ inch.

No. 2.—ASH.

Lengths in feet at different dimensions	¼ of circumference in inches & ½ inches.
8	34½
8	24
13	18½
24	13½
24	13
17	11
17	12
17	8
11	8
5	7

The contents in solid feet
216 feet $11\frac{2}{12}$ inch.

No. 3.—ASH.

11	26
8	16
8	8
5	6½
10	9
22	8½
17	13
10	17½
11	6½
20	7½

The contents in solid feet
188 feet $2\frac{7}{12}$ inch.

No. 4.—OAK.

Lengths in feet at different dimensions	¼ of circumference in inches & ½ inches.
5	40½
4	28
24	10
7	8½
10	19½
15	9
8	10½
6	10½
8	7½
8	10½
13	8
5	11½
12	7
15	8
6	6
7	6½
11	11

The contents in solid feet
184 feet $0\frac{10}{12}$ inch.

No. 5.—OAK.

6	29
8	22
17	8½
17	7½
12	7
7	6
10	7½

No. 5.—*continued.*

Lengths in feet at different dimensions	¼ of circumference in inches & ½ inches.
14	8½
9	6
13	7½
6	6
3	18½
10	10
9	6
15	12
17	8½
17	10½

The contents in solid feet
153 feet 6 inch.

No. 6.—OAK.

9	26½
17	9½
17	8½
17	8½
17	7
17	9
12	6½
6	16
10	7
17	7½
17	9
8	6

The contents in solid feet
126 feet 8 10/12 inch.

No. 7.—ELM.

13	30½
6	22½
8	15
17	12
24	10
11	17
12	14½
17	10½
14	7
22	10

No. 7.—*continued.*

Lengths in feet at different dimensions	¼ of circumference in inches & ½ inches.
19	9
8	9½
10	8

The contents in solid feet
244 feet 11 10/12 inch.

No. 8.—ELM.

11	23
17	14
14	13
14	12
11	10
19	11
10	9½
13	7
15	10
11	8½
9	8
13	8½

The contents in solid feet
155 feet 6 8/12 inch.

No. 9.—ELM.

13	20
11	13
12	12
14	11
15	11
21	9½
9	10
12	9½
11	8
9	9½
10	7½
9	7

The contents in solid feet
124 feet 9 2/12 inch.

No. 10.—BEECH.

Lengths in feet at different dimensions	¼ of circumference in inches & ½ inches.
8	25
6	22
24	13
21	12
12	17
6	14½
17	10½
8	7

The contents in solid feet
132 feet 8 7/12 inch.

No. 11.—BEECH.

8	25
12	14
12	17½
10	11½
7	6½
15	6½
8	7½
18	10½

The contents in solid feet
109 feet 1 5/12 inch.

No. 12.—PLANE.

9	34½
4	38
12	18
9	15
15	10
13	8½
9	7
12	7
18	8
13	13½
23	11
29	13½
14	21½
3	24
17	7½

No. 12.—PLANE.

Lengths in feet at different dimensions	¼ of circumference in inches & ½ inches.
5	7½
22	13½
18	9

The contents in solid feet 343 feet 7 inch.

No. 13.—PLANE.

Lengths in feet at different dimensions	¼ of circumference in inches & ½ inches.
13	30
10	18
18	9
21	7
5	6
7	21
9	7
10	7½
6	13
13	8
5	8½
7	6½
9	8

The contents in solid feet 172 feet 0 7/12 inch.

CHAP. X. APP. No. 7.

AN ACCOUNT OF SOME OF THE MOST REMARKABLE TREES IN SCOTLAND.

"A REGISTER of the dimensions of the most remarkable trees, in any country," it is justly observed by the late Dr Walker,* "would greatly enrich the history of vegetation, and afford many useful conclusions, in the cultivation both of forest and fruit-trees."

The following account of some of the most considerable trees in Scotland, has been drawn up from Dr Walker's Essays, the Statistical Account of Scotland, and other authentic sources.

THE OAK, (*Quercus robur, Lin.*) †

	Ft.	In.
1. An oak, at Killearn Place in Stirlingshire, in 1795 measured, in circumference ‡	12	0

---

* Walker's Essays, p. 3.

† There is an oak in the Lawn of Buchanan, in Stirlingshire, which measures 16 feet 5 inches in circumference at the ground, and 11 feet 5¼ inches four feet from the ground. There are *several* oaks from 10 to 13 feet 7 inches, and 11 feet 5 inches, at four feet from the ground. This, in 1814.—MS. communication to the Reporter by George Menzies esq., chamberlain to the Duke of Montrose.

In the natural woods of Buchanan, there are several oaks which, at one foot from the ground, measure above 8 feet, with a stem of from 10 to 20 feet, of nearly the same circumference. There is one which, near the ground, measures 10 feet; and, at 10 feet above, the circumference is also 10 feet.

‡ Stat. Hist. vol. XVI. p. 3.

	Ft.	In.
2. An oak at Lockwood, in Annandale, on the 29th April 1773, measured, at six feet from the ground, in circumference	14	0
It was about 60 feet high, and supposed to be about 230 years old.[§]		
3. An oak at Blairquosh, in the parish of Strathblane, Stirlingshire, measured, in girth, anno 1796[‖]	15	0
4. An oak at Barjarg, in Nithsdale, July 15th 1796, measured, in circumference, close by the ground	17	0
5. A decayed oak, upon the road between Inversanda and Strontian, in Argyleshire, was measured on the 27th October 1764, and found to be, in girth, at one foot above the ground[¶]	17	3
6. An oak upon Inch Merin, in Loch-Lomond. It stands near the middle of the island, towards the east side; and measured, on the 22d of September 1784,	18	1
7. Wallace's oak,[*] as it has been called for some ages, and which behoved to be a large tree 500 years ago, still remains in the Tor Wood near Stirling. It stands in a deep wet clay soil.		
In 1771, by the nearest guess that could be made of the size of this tree, from the half that remains, it has been, in circumference, four feet above ground, about	22	0
8. In the very old oak wood, on the north side of Loch Arkeg, in Lochaber, there are many trees from 10 to 14 feet in girth; and one (the largest of which we have any account in Scotland) has been measured at that place, which was found to be, four feet above ground,[†]	24	6

THE LARCH, (*Pinus larix, Lin.*)

It being only about 70 years since the introduction of the larch tree into Scotland, few of them have as yet attained to any very great size. There are many fine larches at Killearn and Dunkeld, about 60 years old, being among the first of the kind

---

[§] Walker's Essays on Nat. Hist. and Rur. Econ. p. 5.

[‖] Stat. Hist. vol. XVIII. p. 580.

[¶] Walker's Essays, p. 6. Many remains of other great oaks, it is added, were observed, approaching to the same size, in this valley of Morven, situated among rank heather, in deep peat earth, lying above banks of mountain gravel.

[*] In the Stat. Acc. vol. III. p. 336, it is asserted, 'that this oak, according to a measurement, when entire, was said to be about 12 feet in diameter:' thus giving about 36 feet in circumference.

[†] Walker's Essays on Nat. Hist. &c. p. 9.

	Ft.	In.
that were planted in the open field in Scotland, and 100 feet high, measuring, in circumference, at the ground	10	0
In the garden of Monzie there are four larch trees, said to be the finest and largest in Britain. They are not yet 60 years old. One of them is 80 feet high; its circumference at the ground [‡]	16	0
Other two are about the same height; but the circumference of the one at the ground is	15	0
That of the other is only	9	0
The fourth is 90 feet high; circumference at the ground [§]	8	0

THE ASH, (*Fraxinus excelsior, Lin.*)

1. An ash, near the House of Kames, in the isle of Bute, 80 years old in the year 1771, was about 60 feet high, and measured, in the month of September in that year	10	10
2. An ash at Lockwood in Annandale, 40 yards south from the old castle, on the 29th April 1773, being about 70 feet high, measured, at four feet from the ground	10	10
3. An ash at Newbottle in Mid-Lothian, standing east from the house, near the river, on the 6th July 1789, measured [‖]	11	4
4. An ash in the island of Loch Leven in Fifeshire, on the 17th of September 1796, measured, at four feet from the ground	12	0
5. An ash at Yair in Selkirkshire, measures, at the surface [¶]	12	9
6. An ash near the church of Logierait in Perthshire, in July 1770, measured, at four feet from the ground,	16	0
There is an ash-tree in the church-yard of Drymen in Stirlingshire, which measures, in circumference, at one foot from the ground	15	0
And at the middle of the trunk	13	8
7. An ash in the church-yard of Bonhill in Dunbartonshire, has a trunk in height about	9	0
And, in circumference, where smallest, above [*]	18	0
8. An ash at Castle-Huntly in Perthshire, called the Glamis-tree, in the year 1796, was found, a yard high, to measure	17	0
Near the root [†]	27	0

[‡] Stat. Hist. vol. XV. p. 254.

[§] Stat. Hist. vol. XV. p. 254.

[‖] Walker's Essays, p. 12.

[¶] Selkirkshire reprinted Rep. p. 284.

[*] Dumbartonshire Rep. p. 168.

[†] Stat. Hist. vol. XIX. p. 467.

	Ft.	In.
9. An old ash on the river Blackburn, in the parish of Castletown in Roxburghshire, the trunk of which measures, in circumference [‡] - -	18	0
10. An ash at Midstrath, in the parish of Birse, measures, in circumference, a little above the ground	19	0
At the ground [§] - - - - -	20	0
11. An ash on Inch-Merin, in Loch-Lomond in Dunbartonshire, in September 1784, measured, at four feet from the ground, - - -	20	8
12. An ash near Deskford, in the county of Banff, called St John's tree, measures, in girth [‖] -	24	6½
13. At the distance of a few yards from Cessford castle in Roxburghshire, there is a venerable ash tree which measures, in girth, at the base [¶] -	27	8
14. Another ash on Inch-Merin, towards the north end of the island, in September 1784 measured, at four feet from the ground - - -	28	5
15. An ash tree near the house of Bonhill, in Dumbartonshire, surrounded with a sloping bank of earth, about three feet in perpendicular height, in September 1784 measured, a little above the top of the bank, or about four feet above the natural surface [*] - - - - - -	34	1
16. An ash in the churchyard of Kilmalie in Lochaber, burnt down in 1746, and long considered as the largest and most remarkable tree in Scotland, was measured on the 23d of October 1764; and its remains, in circumference, at the ground, was [†]	58	0

THE ELM, (*Ulmus campestris, Lin.*)

1. An elm at Newbottle Abbey in Mid Lothian, standing north-west from the house, on the 6th of July 1789, measured, at four feet from the ground -	10	4
2. On the estate of Castle-Huntly, there are different elms which measure, [‡‡] at three feet from the ground - - - - - -	11	0
3. Two elms at Yair in Selkirkshire measure, each, at the surface of the ground [§§] - - -	13	0

[‡] Stat. Hist. vol. XVI. p. 79. [§] Ibid. vol. IX. p. 129.

[‖] Ibid. vol. IV. p. 311. [¶] Ibid. vol. VIII. p. 36.

[*] Walker's Essays, p. 15.—County Report.—Stat. Hist. &c. The proprietor has fitted up a room in the inside of it, with benches around, and glass windows. The diameter of the room is 8 feet 5 inches, and from 10 to 11 feet high.

[†] Walker's Essays, p. 17. This tree stood in a deep rich soil, only about 30 feet above the level of the sea, in Lochiel, with a small rivulet running within a few paces of it.

[‡‡] Stat. Hist. vol. XIX. p. 467. [§§] Selkirkshire reprinted Rep. p. 287.

	Ft.	*In.*
4. An elm in the parish of Roxburgh in Tiviotdale, called the Trysting-tree, was measured in the year 1796, and found to be, in girth, at four feet from the ground, about ‖ - - -	30	0

THE BEECH, (*Fagus sylvatica, Lin.*)

1. A beech tree adjoining the ruins of the abbey of Balmerino, on the banks of the Tay, in 1793, measured ¶ - - - - - -	12	7
2. Another beech at Inveraray, whose stem was 12 feet in length, and the diameter of its head 90 feet, measured * - - - - - - -	14	0
3. One beech at Prestonhall, in the parish of Cranston, and county of Edinburgh, in 1793, measured, in girth - - - - - - -	15	0
4. Another at Caickmoor, in the same parish, at the same period, measured, in circumference † -	16	0
5. An old beech, near the castle of Kellie, in the county of Fife, whose stem was 30 feet high, measured, in circumference, in 1793 ‡ - -	16	0
6. The large beech at Newbottle abbey, standing on the lawn behind the house, measured, on the 6th of July 1789 § - - - -	17	0
7. The large beech at Ormiston-hall, in East Lothian, was measured, at four feet from the ground, on the 10th of May 1762, when it was -	18	10
8. The large beech near the house of Oxenford, in Mid-Lothian, was measured on the 6th of June 1763. At the height of three feet from the ground, it was ‖‖ - - - - -	19	6

THE SCOTCH FIR, (*Pinus sylvestris, Lin.*)

1. A Scotch fir at Inveraray measures, in circumference, ¶¶ - - - - -	10	0
2. A fir at Castle-Huntly in Perthshire, measured, in the year 1796, at the height of three feet above ground †† - - - - - -	13	6

‖ Stat. Hist. vol. XIX. p. 134.

¶ Ibid. vol. IX. p. 223.

* Argyleshire reprinted Rep. p. 146.

† Ibid. vol. IX. p. 282.

‡ Stat. Hist. vol. XIII. p. 3.

§ The trees in this list, except where their measure at any other place is particularly mentioned, were all measured at the height of four feet above ground.—See Walker's Essays.

‖‖ Walker's Essays, p. 21.

¶¶ Argyleshire Rep. p. 146.

†† It measured, close to the ground, 19 feet, and probably the largest planted fir in Scotland.

THE SILVER FIR, (*Pinus picea, Lin.*)

	Ft.	*In.*
1. A silver fir at Cleish, in Kinross-shire, of 80 feet high, measures, in circumference, 18 inches from the ground, - - - - -	12	0
The circumference is nearly the same for 18 feet. *		
2. A silver fir, at the house of Polkemmet in West Lothian, in October 1799, measured † -	10	0
3. A silver fir, in the old garden at Woodhouselee in Mid-Lothian, was, in March 1793 ‡ - -	11	1
4. A silver fir, at Drumlanrig in Nithsdale, on the 24th of April 1773, measured exactly - -	12	0

THE PLANE OR SYCAMORE, (*Acer pseudo-platanus, Lin.*)

1. A plane, at Nesbit in Berwickshire, standing on the lawn behind the house, between 60 and 70 feet high, measured, on the 19th of September 1795	12	8
2. A plane, at Torwoodlee in Selkirkshire, measures, where it appears above ground § - -	13	7
3. A plane, at the house of Rosedoe in Dumbartonshire, in 1795, measured, at two feet and a half above ground ‖ - - - -	13	7
4. A plane, in the garden at Castle Menzies in Perthshire, in September 1778 measured -	16	8
5. The old plane-tree, at Ninewells in Berwickshire, standing a little east of the house, in 1795 measured, in girth, below the boughs ¶ - -	17	0
6. A plane, at Calder-house in Mid-Lothian, standing by the road from the house to the church, on the 4th of October 1799, measured - -	17	7
7. The large plane, at Kippenross in Perthshire, supposed to be one of the largest in Scotland. Its dimensions are—Height of the trunk -	13	0
Circumference of the trunk at the ground †† -	27	0

THE CHESNUT, (*Fagus castanea, Lin.*) ‡‡

1. A chesnut, at Newbottle in Mid-Lothian, near the house, on the 6th of July 1789, measured §§ -	11	9

---

* Kinross-shire Report. † Planted in 1705.—Walker's Essays, p. 56.
‡ Walker's Essays, p. 36. § Selkirkshire reprinted Rep. p. 285.
‖ Stat. Hist. vol. XVII. p. 245. ¶ Ibid. vol. XIV. p. 46.
†† Ibid. vol. VII. p. 329.

‡‡ The Reporter has before him the dimensions of a tree, at Ardgartan in Cowal, supposed to be the largest tree in Argyleshire. He saw it about twenty years ago; but does not recollect perfectly whether it is a plane, or a Spanish chesnut. Its dimensions, as *lately* given by a reverend friend, are 16 feet 6 inches, at four feet from the ground.—A number of Spanish chesnuts, in the island of Menteith, Perthshire, measured by the Reporter, are from 16 feet to 17 feet 9 inches, at six feet from the ground.

§§ Walker's Essays, p. 28.—A plane tree north-west from the house, in 1789, measured

	Ft.	In.
2. A Spanish chesnut, at Inveraray in Argyleshire, which has a stem 18 feet in length, in 1794 measured [§] - - - - -	12	6
3. In the old garden at Balmerino, there is a chesnut tree, the bole of which measures [‖] - -	15	0
4. There are some very large chesnut trees at Lord Gray's house of Kinfauns, in Perthshire. The largest of them was cut down in October 1760, and measured - - - - -	22	8
5. The great chesnut, which stood at Finhaven in Forfarshire, was long accounted the largest tree in Scotland. In the year 1774, this remarkable tree, at half a foot above the ground, measured [¶] -	42	8½

BLACK POPLAR, (*Populus nigra, Lin.*)

A Lombardy poplar at Cattor, Stirlingshire, measures, at the ground - - - -	12	0
The height apparently - - -	100	0
A black poplar, at Alloa-house in Clackmannanshire, measured, in the year 1792, at the height of between three and four feet [*] - - -	13	6

THE YEW, (*Taxus baccata, Lin.*)

1. A yew-tree, in the garden at Broich in Stirlingshire, in 1794 measured, at the height of two feet [†] -	10	0
2. A yew, in the garden at Ormiston-Hall in East-Lothian, on the 10th of May 1762, measured -	10	3
3. A yew, at Balikinrain in Stirlingshire, in 1794 [‡] measured - - - - - -	10	3
4. A yew, at the house of Rosedoe in Dumbartonshire, in 1795, at two feet and a half above ground, measured [§§] - - - - - -	12	6
5. A yew, in the island of Inch-Lonachan in Loch-Lomond, measured, on the 3d of August 1770	10	7
6. Another, the largest in the same island - -	13	0
7. The great yew at Fortingall in Perthshire, measured by the Hon. Judge Barrington, before the year 1770, was found to be, in circumference [‖‖] -	52	0

---

measured 18 feet 7 inches. Dr Walker styles the sycamore the *Platanus orientalis*, Lin. and seems to consider it as distinct from the plane.

[§] Argyleshire reprinted Report, p. 146.

[‖] Stat. Hist. vol. IX. p. 223.

[¶] Walker's Essays, p. 29.—This tree was supposed to be about 500 years old.

[*] Stat. Hist. vol. VIII. p. 594.

[†] Ibid. vol. XV. p. 328.

[‡] Ibid. vol. XVI. p. 111.

[§§] Stat. Hist. vol. XVII. p. 245.

[‖‖] Philos. Trans. vol. LIX. anno 1770, p. 37.

The ALDER TREE, (*Betula alnus, Lin.*)

	Ft.	*In.*
There is, in the parish of Drymen, an alder tree, which, in 1795, measured, round the trunk ‖ -	19	6

The first barren trees planted in Scotland, not long before the middle of the seventeenth century, were those of exotic growth; such as, the plane, alder, beech, chesnut, lime, and pitch and silver firs. These, at the time, were planted in gardens, rather from curiosity, or for ornament, than for use.

There seems to be good reason, as has been already suggested, to believe, that the plantation of exotic trees was introduced in the domains of monasteries, priories, and other ecclesiastical establishments, at a *very early period.* It is certain that the monks of Cambuskenneth introduced fruit-trees from France, long before the Reformation. It is probable that the Spanish chesnuts of Inchmahoma, &c. were also introduced about the same period, with various other trees of foreign growth. Whether the aged oaks, in the lawn of Buchanan, are indigenous, or planted, may admit of a doubt; but that some of them are three hundred years old, cannot admit of any.

The *Myrica cerifera,* a native of Nova Scotia, furnishes a wax, the candles made of which burn excellently, and have a fragrant smell. It might perhaps be introduced here in moist soils. The *Myrica gale* grows in great abundance in the Highlands of Scotland. In Devonshire, it is said that it produces a wax similar to the above. It seems to merit a trial.

From what information can be obtained, the other exotic forest trees were first planted in Scotland at or about the following periods, and at the following places. ¶

Lime - - - - - - -	Taymouth	1664.
White willow - - - - - -	Prestonfield	1678.
Silver and pitch fir - - - - -	Inveraray	1682.
Maple - - - - - - -	Inveraray	1682.
Walnut - - - - - - -	Kinross	1690.
Hornbeam - - - - - -	Drumlanrig	1692.
Black poplar - - - - - -	Hamilton	1696.
Laburnum - - - - - -	Panmure	1705.
Horse-chesnut - - - - -	New Posso	1709.
Sycamore - - - - - -	Holyroodhouse	1710.
Flowering ash. Frax. orn. Lin. -	Bargaly	1712.
Weymouth pine - - - - -	Dunkeld	1725.
Larch - - - - - - - -	Dunkeld	1727.
Evergreen oak - - - - -	Newhails	1730.
Balm of Gilead fir. Pin. balsam. Lin.	Arbigland	1732.

‖ Stirlingshire Report, p. 229.

¶ Walker's Econ. Hist. of the Hebrides.

Deciduous cypress Cupress. dist. Lin.	Loudon	1733.
Spanish oak. Quercus ægilops, Lin.	Newhails	1734.
English elm - - - - -	Dalmahoy	1736.
Norway maple. Acer platanoides -	Mountstewart	1738.
Tinebark willow - - - -	Newhails	1739.
Cedar of Lebanon - - - -	Hopeton	1740.
Carolina bird cherry - - -	Hopeton	1743.
Hungarian nut - - - -	Carmichael	1744.
Amerina willow - - - -	Mellerstain	1746.
White Newfoundland spruce - -	New Posso	1759.
Sugar maple - - - - -	New Posso	1759.
White and blue American ash - -		
Long-leaved American pine, black American larch, and paper birch -	- - -	1763.
Black American birch - - -	Elliock	1765.
Lombardy poplar - - - -	New Posso	1766.
Balsam poplar - - - -	Leith	1770.

Chap. X. App. No. 8.

Laws regarding Planting.

Scotch Acts.

I. *Regulations.* The Scottish legislature, subsequent to the reign of James I., appears to have been very solicitous for the improvement of the country; employing both reward and punishment, to induce landholders to enclose their estates, and adorn them with trees and forests. *

II. *Punishments.* The destruction of planting was punishable by a great variety of enactments, by pecuniary fine, according to the quality of the offender, upon evidence and oath of party. By one statute, (James II. 1479, c. 84.) the penalty for the first offence was 10*l.* Scots to the proprietor; 20*l.* Scots for the second, and 40*l.* Scots for the third, besides damages. Previously to this act, the law inflicted not only the lesser corporal punishments of the stocks, but in some cases went the length of a capital punishment. "And, in case the committer of the wrang be unresponsal, he sall, for the first fault, be put in the stocks, prison, or irons, eight days, on bread and water; and for the second fault, fifteen days; and for the third fault, one month to lie in the stocks, and to be scourged at the end of the month."

This was confirmed by Parl. 9th, James VI. act 1607, c. 3.

---

* Parliament of James II. anno 1457, c. 80, and 10th Parl. James V. enjoining proprietors to plant a portion of their lands, "under the penalty of ten pounds, and lesse or mair, after the rate and quantitie of their lands."

which farther enacts, "that whosoever shall be found hereafter to break down his neighbour's woods, and park dykes, fenses, stanks, or closoures, to pastour within the said fenses, cut trees, broome, or sheare grass, within the samine, shall be conveined, and called therefore, as an breaker of the law, either before the privy councill, or any other ordinare magistrat within this realme, at the option of the party compleiner: and the penalty to be imposed and taken of the contraveiners, before the saide ordinare inferiour judges, not to exceed the summe of forty pounds money of this realme. And the secret councell to impose sik penalties against the contraveiners of this present act, as, after tryell taken in the cause, they shall finde the offence to merite and deserve. But" (i. e. without) "prejudice alwyse of putting of all former acts of parliament, made thereanent to execution, after the tenour thereof, in all poynts; to the whilk this present act shall make no derogation."

Act 1641, c. 45, prohibits the demolishing, downcasting, climbing over, or anywise wronging the dikes or enclosure, and planting within the same, under the penalty of l.

The statute 1661, c. 41, ordained, "that whosoever shall cut or break any of the said trees, (not being the heretors themselves), shall pay unto the heretors, or persons wronged, 20l. Scots for every tree; or if he be not able to pay the said 20l. it shall be in the power of the party thereby wronged, to make him work six weeks, giving him meat and drink allenarly." And the act 1685, c. 89, James VII. Parl. 1. ordains, "that no person shall cut, break, or pull up any tree, or peel the bark off any tree, under the penalty of 10l. Scots for each tree within ten years old, and 20l. Scots for every tree above that age. The havers or users of the timber of any tree so cut, broken, or pulled up, are declared liable to the same penalty, unless they can produce the guilty person who committed the misdemeanour."

Act 1661, directs process to be granted at the instance of the *party damnified*; and the other statutes are not explicit as to the form of the action, whether at the instance of the private party alone, without concourse of the procurator fiscal.

Fruit trees in orchards, fall under the statutes for the preservation of planting. As also natural woods, where the trees are of that value, to be cut down and sold. *

British Statutes.

Statute 1 Geo. I. c. 48, § 1, enacts, that "if any person shall maliciously break down, cut up, pluck up, throw down, bark, destroy, or spoil any timber tree—fruit tree—or other tree—it shall be lawful for any two justices of the county, upon complaint by any inhabitant of such parish, or of any other, to cause such offender to be apprehended; and to hear and finally determine, and adjudge all and every the offence aforesaid. And if such justices shall convict any person, then such justices shall commit such offender to the house of correction, there to continue and be kept to hard labour for three months; and where there are no houses of correction in the county, the justices shall commit him to prison for four months; and shall also order, that such offender be publicly whipped by the master of such house of correction once every month, during such three months, in such borough or corporation, if the offence be committed therein, or in the market town where such house of correction stands, or in the next market town in the county, on the market day, between the hours of eleven and twelve; and where there is no house of correction, the justices shall order such offender to be whipped by the hangman, once every month, during such four months, on the market day, where such offender shall be committed, or on the market day of some town, between the hours aforesaid."

---

* Hutcheson's Justice of Peace, &c. Vol. II. p. 496.

Before such offender be discharged, he shall find sureties for his good behaviour for two years.

And if any person shall maliciously set on fire, burn, or cause to be burnt, any wood, underwood, or coppice, he shall be punished as a wilful fire-raiser. †

Those who shall in the night-time spoil, destroy, or carry away, any root, shrub, or plant, of the value of 5s. sterling, growing in a nursery, or other enclosed ground, shall be deemed guilty of felony, so as to suffer transportation for the space of seven years. And those who wilfully are aiding, abetting, or assisting, shall be liable to the same punishment. ‡

6 Geo. III. c. 48. Every person who shall wilfully cut, or break down, bark, burn, pluck up, lop, top, crop, or otherwise deface, damage, spoil, or destroy, or carry away, any timber tree or trees, or trees likely to become timber, or any part thereof, or the lops or tops thereof, without the consent of the owner, (or in any of his Majesty's forests or chaces, without the consent of the surveyor, or his deputy, or persons entrusted with the care thereof), and shall be thereof convicted on the oath of one or more credible witness or witnesses, before one or more justices, shall, for the first offence, forfeit a sum not exceeding 20*l.* sterling, together with the charges previous to, and attending such conviction, to be ascertained by such justice; on non-payment thereof, to be committed by such justice to the common jail, for any time not exceeding twelve months, nor less than six, or until the penalty or charges shall be paid: For the second offence, to forfeit not exceeding 30*l.* sterling, together with the

---

† § 4, 7 Anne, c. 21.

‡ 6 Geo. III. c. 36.

charges as aforesaid; on non-payment, to be committed as aforesaid, for any time not exceeding eighteen months, nor less than twelve, or until the penalty and charges shall be paid: And if any person so convicted, shall be guilty of a like offence a third time, and shall be thereof convicted in like manner, he shall be deemed guilty of felony, and the court before whom he shall be tried, shall have authority to transport him for seven years. And all oak, beech, chesnut, walnut, ash, elm, cedar, fir, asp, lime, sycamore, and birch trees,‖ shall be deemed timber trees, within the meaning of this act.

Dr Burn observes, that it cannot be intended that justices shall have the power of transporting, and that the word *court* implies a legal trial by jury: that transportation, being a punishment not competent to be inflicted even by the sessions, and being contrary to the common law of Scotland, it could not be intended, by the above clause, to deprive the subject, by implication, of the privilege of a jury trial, in the case of transportation. On this point, Mr Hutcheson justly remarks, that "there is a price, at which, even the external beauty and cultivation of the country, may be purchased too dear."

Section third, relates to the punishment of those plucking up, or destroying roots, shrubs, or plants, out of fields, nurseries, or gardens, by a fine, not exceeding 40s. Sterling, with expenses; and for the second offence, in any sum not exceeding 5*l.*; and upon conviction of a third offence, he shall "be deemed guilty of felony, and may be transported to America, in like manner as other felons are directed to be transported by the laws and statutes of this realm." Dr Burn's objections to the power of the justices to inflict the punishment of transportation, is also applicable here.

By section fourth, all persons cutting or destroying "any kind of wood or underwood, poles, sticks of woods, green stubs, or young trees, or carry or convey away the same, or shall have in his, her, or their custody, any kind of wood, underwood, poles, sticks of wood, green stubs, or young trees, and shall not give a satisfactory account, how he, she, or they, came by the same, and shall be thereof convicted before any one or more of his said Majesty's justices of the peace, on the oath of one or more credible witness or witnesses, shall, for the first offence, forfeit and pay, immediately on conviction, any sum not exceeding the sum of 40s., together with the charges previous to, and attending such conviction, to be ascertained by the said justice or justices who shall convict the offender or offenders. And if any person or persons shall commit any of the offences aforesaid a second time, and shall be thereof again convicted, in manner aforesaid, he, she, or they, shall forfeit and pay, any sum not exceeding the sum of *5l.* sterling, together with the charges previous to, and attending such conviction, to be ascertained as aforesaid. And if any person or persons shall commit any of the offences aforesaid a third time, that then such person and persons, being duly convicted thereof, according to law, shall be deemed and adjudged an incorrigible rogue or rogues, and shall be punished as such."

‖ And also poplar, alder, larch, maple, and hornbeam; 13 Geo. III. c. 33.

"And it shall be lawful for such justice or justices, unless the respective forfeitures shall be paid down upon conviction forthwith, where not otherwise directed by this act, by warrant under his or their hands and seals, to commit such offender or offenders, for the first offence, to the house of correction, for one month, to hard labour, and to be once whipped there; and for the second offence, where not otherwise directed by this act, to the house of correction for three months, to hard labour, and to be whipped there once in every one of the said three months.

"And if any person or persons shall at any time hinder, or attempt to prevent, the seizing or securing any person employed in carrying away any such timber or other trees, every such person so hindering, or attempting to prevent such seizing or securing, shall, for every such offence, forfeit and pay *10l.* sterling to the person or persons who shall convict such offender; and if the said sum be not immediately paid, on conviction, the person or persons so convicted shall be, by the justice or justices before whom he, she, or they shall be convicted, committed to the house of correction, to hard labour, for any time not exceeding six calendar months."

It is directed, "that one moiety of all and every the forfeitures hereinbefore directed to be paid in pursuance of this act, and not otherwise directed, shall go to the informer, and the other moiety to the person or persons aggrieved."

It is directed also, "that the conviction and convictions of all and every offender and offenders against this act, shall be certified by the justice or justices of the peace before whom the same shall be made, to the next general quarter sessions of the peace, to be filed amongst the records of the said sessions." The statute farther directs the conviction "to be fairly written on parchment or paper, in the form which it prescribes, or in other form of words to the like effect: * which said conviction shall be good and effectual in law, to all intents and purposes; and shall not be quashed, set aside, or adjudged void and insufficient, for want of any form or words whatsoever, nor be liable to be removed by certiorari into his Majesty's court of King's Bench, but shall be deemed and taken to be final, to all intents and purposes whatsoever."

---

* i. e. "Be it remembered, that on the day of in the year A B was, on the complaint of C D, convicted before of the justices of peace for in pursuance of an act passed in the 6th year of the reign of his Majesty King Geo. III. for as the case may be Given under our hand and seal, &c."

If such decisions of the justices be final in Scotland, it arises from the general words at the close of this section. The exclusion of the Court of King's Bench could not, in sound construction, exclude the review of our Supreme Court.

Statutory Presumption.

A violent precaution has been taken, for checking such depredations. A presumption, *juris et de jure*, of guilt, has been introduced by two statutes, the one Scottish,* the other British.† By the Scottish statute, it is enacted, "that all tenants and cottars shall preserve and secure all growing wood and planting that is upon the ground they possess; that none of it be cut, broke, or pulled up by the roots, or the bark pulled off any tree, and that under the pain, to be exacted by their masters allenarly, of 10*l.* Scots for each tree within 10 years old, and 20*l.* Scots for each tree that is above the said age of ten years, unless the samen be done by warrant and order of the said master and heretor of the ground; and ordains the tenant to be liable for his wife, children, and servants, or any others within his family, that shall contraveen this present act."

The Scottish statute subjects the tenant in the damage, unless he discover the real delinquent.‡ Nay, it holds him liable, if the damage was done by wife, bairns, or servants, though without his knowledge, and against his will and orders.§

Under the term "growing wood," such trees as are not worth preserving for sale, are not comprehended.‖

The British statute, subjects the whole inhabitants of the ville or village in the neighbourhood whereof the delinquency has been committed, in pecuniary damages, unless the guilty person be discovered within six months. And, for the better discovery of such offenders, jurisdiction is vested in any two justices, to whom any of the inhabitants of the village shall complain; which two justices shall finally determine such offence, and shall have power to commit such offender to the correction, to be there dealt with as specified in the said act.

---

* William, Parl. 1, 1686, c. 16.

† 1 Geo. I. c. 48, § 1.

‡ Dict. Vol. II. tit. Planting.

§ Hutcheson's Justice of Peace, &c. Vol. II. p. 499.

‖ Ibid.

CHAP. X. APP. No. 9.

OBSERVATIONS ON THE LARCH.

Transmitted to the Commissioners of Naval Revision in May 1807.

By the DUKE OF ATHOLL.

The introduction of this most valuable tree into Scotland, at least into the county of Perth, took place in the year 1738, when a Highland gentleman, Mr Menzies, of Glenlyon (Perthshire), brought a few small plants from London.

Some of these plants he left at Monzie, near Crieff; some at Dunkeld; and the remainder he carried home, where the last was cut within these few years, of a great size. The four left at Monzie are in full vigour [1807], the largest nearly thirteen feet in circumference, at three feet and a half above the ground. Those left at Dunkeld [1807] are also in full vigour, though, at first, they were placed in a greenhouse; but, not thriving, were turned out. The largest is about twelve feet in girth, at three feet and a half above the ground, and is computed to contain four ton or load of solid timber, or one hundred and sixty square feet. Nearly ten years elapsed before any more larch were planted at Dunkeld. A few, however, were planted at Blair in that interval. The larch, however, planted between the years 1740 and 1750, were inconsiderable in point of number. For the planting of the rocky mountains round Dunkeld and Blair, with a view to their growing wood, which has since been done, would at that time have been treated as a chimerical idea. The plantations on the lower grounds were necessarily small in extent.

Trials of Larch.

It is now thirty years [1777] since I have cut and used larch for different purposes: and as yet I have met with no instance to induce me to depart from my opinion, that larch is the most valuable acquisition, in point of useful timber, that has ever been introduced into Scotland: and I speak from having used and cut larch of from fifty to sixty years' growth.

The small larch I have used were thinned out of plantations for upright paling, rails and hurdles. Those fit for sawing were sawn through the middle; the smaller used round, with the bark on. I have found young larch so used more durable than oak copse-wood of twenty-four years growth.

The larger and older larch which I have cut, have been used for a variety of purposes. Boats built of it have been found sound, when the ribs made of oak, forty years old, were decayed. I have for years built all my ferry and fishing-boats of larch.

In mill-work, and especially in mill-axles (where oak only used formerly to be employed), larch has been substituted [1806] with the best effect. Last winter, in cutting up an old decayed mill-wheel, those parts of the water-cogs which had been repaired with larch [1786] about twenty years before, though black on the surface, on the hatchet being applied, were found as sound and fresh as when put up.

There is not a sufficient quantity of larch of fit growth to bring that wood into general use for country purposes; but such as has been cut and sold, has brought two shillings per foot, in some instances more. About seven years ago [1800], I received twelve guineas for a single larch tree of fifty years growth. I was, at the same time, offered twenty pounds for another larch, which I declined cutting. The tree sold, had eighty-nine solid square feet of wood; and the purchasers cut two, if not three axles for mills out of it.

Last year [1806] I cut out twenty larch trees from a clump, where they stood too thick. I left the finest trees standing, and received one hundred guineas for the twenty trees taken out, being at the rate of two shillings per foot. The largest of the twenty trees measured one hundred and five feet in length, five feet eleven inches in girth, at four feet from the ground, and contained ninety-four square feet of timber. One tree measured one hundred and six feet; two, one hundred and seven; and one, one hundred and nine feet in length; but, being drawn up by standing too close, did not contain so much solid wood as the first.

It is not in the quality only of the wood that I consider the larch a great acquisition, but in the nature of the ground, where it will not only grow luxuriantly, but, I am persuaded, will arrive at a size fit for any purpose to which wood can be applied.

The lower range of the Grampian hills, which extend to Dunkeld, are in altitude from one thousand to twelve hundred feet above the level of the sea; they are, in general, barren, and are composed of mountain schist, slate, and iron stone. Up to the highest tops of these, larch grows luxuriantly, where the Scotch fir, formerly considered the hardiest tree of the north, cannot rear its head. In considerable tracts, where fragments of shivered rocks are strewed so thick that vegetation scarcely meets the eye, the larch puts out as strong and vigorous shoots as are to be found in the valleys below, or in the most sheltered situations.

I have been employed, for the last five years, in forming a very extensive plantation of larch, on mountains similar to what I have described. The plantation embraces a tract of nearly eighteen hundred Scotch acres, nearly fifteen hundred of which I have already planted [1807] mostly with larch; placing Scotch fir only in the wet grounds where larch will not grow, and mixing spruce on the highest points with the larch; finding, from experience, that that tree is next in value to, and thrives in alpine situations almost equally with, the larch.

In all the larch which I have cut, I have never met with one instance of decay; but I have seen larch cut in wet situations, and tilly soil, on low moors some miles from Dunkeld, which were decaying at the heart. The larch is certainly an alpine tree, and does not thrive in wet situations.

About twelve years ago [1795] a species of blight appeared on the larch, which, in low situations, destroyed numbers. The season in which this was observed to any extent, the frosts were very severe late in the spring, and the clouds of frost fog, which rested on the larch, on calm mornings, when just coming into leaf, produced the blight. I did not find trees above twenty-five or thirty feet in height affected by it; neither did it appear at all on the higher grounds, where a slight breeze of air could shake the trees. For eight or ten years past, severe frosts at the end of spring and beginning of summer, have partially brought blights, nearly destroying the flower of the larch; which has prevented my having been able to obtain larch seed in the quantity I wished, in order to carry my intention into effect, to cover all the mountainous tract near Dunkeld, belonging in property to me, with the larch, which, I am persuaded, at the distance of sixty or seventy years from planting, will be fit for most naval purposes.

The comparative value of larch and Scotch fir, will not bear calculation. I sold a larch [1800] of fifty years old for twelve guineas. A fir of the same age, and in the same soil, was worth fifteen shillings. A fall of snow will destroy in one night, and break and tear down sometimes more than one third of a fir plantation. This I have often experienced at all ages. High winds also destroy firs in numbers. The larch are never broken by snow, and very seldom torn up by winds, and then only in single trees. Scotch firs are bad and shabby growers, (with me at least), at about eight hundred feet of altitude. Larch grow luxuriantly some hundred feet higher.

The late Duke of Atholl, my father, was the first who formed plantations around Dunkeld or Blair [1765] to any extent. He only began forty-two years ago. The quantity of old larch I could at present [1807] spare, therefore, cannot be considerable; but should the Board, from any thing I have said of its durability in boats, &c. be inclined to make trials for naval purposes, I could perhaps furnish for *that purpose* forty or fifty tons. Or, I should be extremely ready and happy to carry into effect experiments, if the Board should think fit to direct the making of any, to prove the strength, weight, durability, &c. &c. of *larch-wood.*

I would not, Gentlemen, have troubled you with the foregoing detail, but from a thorough conviction, that larch timber may be used, in many instances, as a *substitute for oak ;*

That this substitute may be had of a prime quality in sixty or seventy years from the period of planting ;

And, lastly, that this substitute may be the produce of otherwise barren and unprofitable mountains ; whereas oak timber will always be found to thrive best in lands either taken from, or well adapted to agricultural purposes, and more particularly to the growth of wheat.

CHAP. X. APP. No. 10.

ON TANNING WITH THE BARK OF LARCH.

By THOMAS WHITE Esq.

SIR, *Turf Coffee-House, Edinburgh,*
Feb. 18. 1812.

FROM the great pleasure that I know you always take in communicating and extending useful knowledge and improvement, and from the honourable and important situation you hold, as President to the Board of Agriculture, I trouble you with this letter, which, I flatter myself, will be the means of affording great benefit to the country at large, as well as considerable emolument to those in possession of woods, from a discovery that I have made of converting to profit, what was formerly thrown away as good for nothing.

Some years ago, after my late father's plantations at Woodlands, near Durham, had made considerable progress (for which he had the honour of receiving from the Society of Arts and Sciences in London nine gold, and two silver medals), he, amongst other projects, thought, that the bark of the larch-tree might be useful in tanning leather ; but was prevailed upon to give up the experiment, by some person who, I suppose, classed this tree with the fir-tribe instead of the cedar. However, in June last, whilst some workmen were taking off the bark from a number of larch-trees intended for building, they found the nails of their fingers stained, which induced me to try whether it would tan leather or not, a purpose I was very soon satisfied it would answer most effectually. I then procured two calf skins, of equal price, weight and substance, and immersed one in an infusion of oak-bark, of amazing fine quality, such as can rarely be purchased, and the other in the same proportion of larch-bark, from a very small tree, each skin remaining exactly the same time in its respective tan-pit; and, during the operation, I repeatedly weighed a measure of larch-liquor against the oak, and always found the former to preponderate; the consequence of which was, that the skin tanned with larch felt thicker in the hand, and heavier, and was also finer in the grain, and of a lighter colour.

I sent these two skins to the Society of Arts and Sciences in August last, and put as many hides, equally divided, into each of the two tan-pits as nearly exhausted their strength; at the expiration of which time, the larch liquid appeared to have the superiority both in astringency and weight.

I have been since employed in tanning hides of cows and horses with larch-bark, which, of course, require much longer time than calf-skins, but promise just as fair to arrive at perfection. I have tried also equal quantities of larch and oak-barks, mashed in hot water, and applied when cold to the skins, and with the same effect as in the former case. I also compared birch with the larch; but was soon convinced that the former, from its slowness in tanning, and apparently exhausted state, after proceeding a certain length, was very inferior; and yet it is sold in my neighbourhood for half the price of oak. What, then, I ask, must be the value of larch?

Although I am happy to think, Sir, that the discovery, from the immense plantations in this country, will, in some measure, make the importation of bark unnecessary, I feel an additional pleasure in the certainty of its answering other very important purposes, viz. of promoting planting, and inducing gentlemen to thin their woods, which, in my professional excursions of laying out grounds, and planting by contract, I have often most strenuously recommended, but without prevailing upon some to do so, from the difficulty of selling the weedings, which expense will be much more than repaid by the price of the bark, should the body of the tree even be suffered to rot on the ground.

It must be observed, that oak bark can only be taken from the tree during about two months in the year; whereas larch can be collected from about March to the end of August, and at infinitely a cheaper rate, as a whole tree, whatever length it may be, can be stripped from one end to the other entire with the greatest ease.

Since leaving Woodlands, I have received a most favourable report from a tanner, who has converted the leather into shoes, of which he speaks very highly, as well as of its superiority for gloves, saddles, &c. He adds also, that, in his opinion, it is not only equal to oak-bark, but even better, on account of its tanning quicker.

I beg leave to return the leather, which I have shown to-day to Dr Hope, who was so good as to speak favourably of it. I have also inquired of Patterson the saddler, about buff leather, who manufactures it; and he says no bark is used in the process, but only oil.

I have the honour to be,
SIR,
Your most obedient humble servant,
THOMAS WHITE.

Rt. Hon. Sir John Sinclair, Bart. &c.

Memorandum.—In another communication from Mr White, dated June 26th 1812, he states, that "on passing through Hexham, he was happy to see shoes made from leather tanned with the larch-bark; and was told, that the glovers were so well convinced of its excellency, that they declared they would use nothing else, if they could get a sufficient supply." In addition to which pleasing intelligence, he has had an order for much more larch bark annually than he can supply, for making leather of a light colour for book binding, &c.

The experiments made by Mr White induce him to believe, that larch-bark is not only equal to oak in every particular, but superior in regard to the articles above mentioned, and for many other purposes.

At Hexham, also, they have been successfully using the bark of the Scotch fir for tanning purposes.

CHAP. X. APP. No. 11.

COMMUNICATION ON THE BEST MODE OF PLANTING TREES, AND OTHER INTERESTING SUBJECTS.

By A. P. HOVE, Esq. a Native of Poland: Addressed to the Right Hon. Sir JOHN SINCLAIR, Bart. President of the Board of Agriculture.

SIR, *Rathbone-place, 9th June,* 1812.

I HAVE the honour to return you herewith the paper on woods and plantations, that you had the kindness to forward to me for my perusal and remarks.

The author appears to me to have discussed the subject in such a manner, as to leave but few opportunities for making any useful remarks; my opinion, however, is decidedly against the *planting* of forests, and cannot express in terms too strong the preference that should be given to the propagation of the various sorts of timber-trees, by *sowing* the seeds of them, where they are intended to mature, in the soil most congenial, and in situations the most favourable to every species. It is on this head to be remarked, that the digging a large extent of land for the reception of the trees, and the subsequent labour in planting them, is attended with much expense (a circumstance of itself not unworthy of consideration), and the trees so planted, never grow with that freedom and luxuriance as those raised from seed on the spot. These observations particularly apply to the oak, birch, and all the pine tribe, more especially when the plantations of them are formed in exposed situations; because, as the stem and head of a seedling plant increase only in proportion to the nourishment it receives through, and the support imparted to it from its root, it is better enabled to sustain the violence of the wind (which by forcibly agitating it, impedes its growth) than the tree newly planted, which by being deprived of a great proportion of its roots, has, consequently, lost much of its natural power of affording to the plants that nutriment, so necessary to its external and immediate protection.

In confirmation of these remarks, I have noticed in Poland a plantation formed partly from seeds, and partly from plants, sown and planted at the same time; and although every possible care and attention were paid to the removal of the young trees from the adjacent forests, and also in the planting of them, yet in the period of seven years the seedling plants by far exceeded those that were removed, both in size and luxuriance. The same reasons do not, however, operate so forcibly against the planting of ash; this tree being provided by nature with numerous fibrous roots, it consequently suffers but little in its removal.

In Poland there are three sorts of oaks (the quercus); robur, or the common; the cerris; and another sort, with which I have not met any where else in my travels in Europe, except on the river Bug: this is the sort which supplies the English navy with their crown planks. This tree has hardly any collateral branches in its infant state, which is so common to all the other known sorts. After having raised itself from the acorn to the height of seven feet, it assumes a diagonal form, or position, and the tops of such trees in the plantations are quite entangled with each other: but on arriving at the age of fifteen or sixteen years, they acquire a height of from twenty-four to thirty feet, begin to form a crown, gradually erect themselves, and become majestic and stately trees. The leaves of this tree are much narrower, longer, and more deeply cut in than the robur; the bark is perfectly smooth, and the acorn long and pointed. On my leaving the district of Belsk, where they grew, five years ago, but few of these trees remained; as the Jews, who are the renters and fellers of timber, had cut them down indiscriminately, with a view to immediate profit. These rich and immense forests, which skirted the river Bug, and wherein I botanized sixteen years ago, are now no more, there remaining only a few trees very thinly scattered, which owe their existence to the circumstance only of their being in situations far distant from the river. I procured a considerable quantity of the acorns on my leaving Poland, with the view of enriching this country; but having sent my collections *via* Dantzig, where the French arrived shortly after, I am, at this moment, ignorant of the manner in which they have been disposed of. Two hundred bushels of acorns of this valuable species, would certainly be a great acquisition, if not a real source of riches, to this country; they would answer for hedge-planting perfectly well.

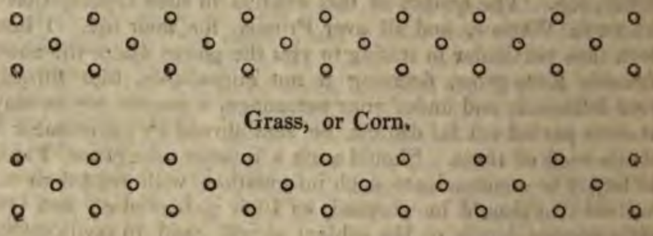
The Swirk is another tree that would be of great value to this country; it is a species of fir, that is peculiar to the mountains of Pokutia, or mountains of Penitence, where Ovid was exiled. The height and bulk of this tree is incredible; and it is not very nice in regard to soil, as it grows in the most rocky and inclement situations on these mountains. The white ash of the Palatinate of Belsk, and a sort of maple, are trees that would also be of great value in England; they both grow to an immense height. The Polish king, John Sobiesky, was so struck with the size and beauty of these trees, that he built himself a residence in the neighbourhood of the forests where they grew, and formed a large town, which is still in existence, to which he gave the name of Jaworow; Jawor denoting, in the Polish language, this species of acer. The black birch, in the same Palatinate, in the circle of Mosciska,* is a new and unknown species: The wood of this tree is more solid than in any other of this genus, on which account the wheelwrights and millwrights give it the preference. The quality of this wood is in such repute, that it is sent to Warsaw, and all over Prussia, for their use. I have been thus particular in stating to you the places where the above valuable trees grow, deeming it not improbable, that through your influence, and under your patronage, a proper person may, at some period not far distant, be sent abroad by government to obtain seed of them. Should such a mission take place, I shall be happy to communicate such information, with regard to the method that should be pursued, as I am possessed of, and give such further details on the subject as will tend to facilitate the object in view. The greatest precaution will be necessary, as the government of Gallitia is jealous in the extreme in the admission of any stranger into that district, having at the mouth of the pass that leads to the Pokutian mountains, saline works, which no stranger whatever is allowed to visit. The jealousy is so great, that I have witnessed gentlemens' stewards, who were possessed of the least education, sent back to their employers, from their estates, and illiterate people were, by obligation, sent in return to supply their places. This is the true reason why the Poles know so little of their own country; even the Court of Vienna, who has possessed that territory for nearly forty years, is but little acquainted with the real produce of these mountains.

---

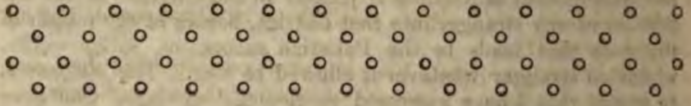
* An estate belonging to Count Palatine de Cetner,

The following observations that I made some years ago at the Cape of Good Hope, and also in the vicinity of Dantzig, may be perhaps usefully applied to such plantations as may be in situations exposed to powerful winds, thereby impeding the growth of the trees. In the Quada monsoon at the Cape, and in some months of the year at Dantzig, the growth of trees is very much checked by the powerful winds; they lean always in the direction to which the wind points, and their tops have the appearance of being clipped with shears. This circumstance has induced me to remark, that the trees in the direction of the wind suffered much less than those that opposed or crossed its course; I always, therefore, recommended my friends abroad to plant their fruit trees in a direct line, and with the course of the prevailing winds, by which means its pressure was, in a great measure, broken when they grew up, having a more free and unobstructed passage. The method that appears the most preferable, is to plant the trees in the form of a triangle, sixteen feet asunder, always in a line, leaving an intermediate space, or ally, of thirty feet between the rows, which may either be cultivated with grain, or left for pasture, as the soil and situation of the ground will admit, or the discretion of the proprietor may direct.

Plantation of Fruit Trees in a Triangle.



Plantation of Forest Trees.



Honey, another agricultural production, respecting which you are anxious to procure information, is in Poland divided into three classes, namely Lipiec, Leszny, Stepowey prasznymird.

Lipiec is gathered by the bees from the lime-tree alone, and is considered on the continent most valuable, not only for the superiority of its flavour, but also for the estimation in which it is held, as an arcanum, in pulmonary complaints, containing very little wax, and being consequently less heating in its nature; it is as white as milk, and is only to be met with in the lime forests, in the neighbourhood of the town of Kowno, in Lithuania. The great demand for this honey occasions it to bear a high price, in so much that I have known a small barrel, containing hardly one pound weight, sell for two ducats on the spot. This species of the lime-tree is peculiar to the province of Lithuania; it is quite different from all the rest of the genus Tilia that I met with in my researches in Poland, and is called Kamienna Lipa, or stone-lime. It is a stately tree, and grows in the shape of a pyramid; the leaves are very small, and the twigs uncommonly slender; it flowers in the months of June and July; the flowers are very minute, but more abundant than in any other species. In the Polish language, the month of June, which is called Lipiec, derives its name from the flowering of this tree, as the month of July derives its name from the Cocus Polonicus, called by the Poles Czerwiee, in which month the ova are gathered. The inhabitants have no regular bee-hives about Kowno; every peasant who is desirous of rearing bees, goes into the forest and district belonging to his master, without even his leave, makes a longitudinal hollow aperture or apertures in the trunk of a tree, or in the collateral branches, about three feet in length, one foot broad, and about a foot deep, where he deposits his bees, leaves them some food, but pays very little further attention to them, until late in the autumn; when, after cutting out some of their honey, and leaving some for their maintenance, he secures the aperture properly with clay and straw against the frost and inclemency of the approaching season; these tenements, (if they may be so called), with their inhabitants, and the produce of their labour, are then become his indisputable property; he may sell them, transfer them; in short, he may do whatever he pleases with them; and never is it heard that any depredation is committed on them, (the bear excepted). In Poland the laws are particularly severe against robbers or destroyers of this property, punishing the offender, when detected, by cutting out the navel, and drawing out his intestines round and round the very tree which he has robbed. Such thefts have happened, but not in my memory.

The following spring, the proprietor goes again to the forest, examines the bees, and ascertains whether there is sufficient food left, till they are able to maintain themselves; should there not be a sufficient quantity, he deposits with them as much as he judges necessary till the spring-blossom appears. If he observes that his stock has not decreased by mortality, he makes more of these apertures in the collateral branches, or in the trunk of the tree, that in case the bees should swarm in his absence, they may have a ready asylum. In the autumn he visits them again, carries the June and July work away with him, which is the Lipiec, and leaves only that part for their food which was gathered by them before, and after the flowering of the lime-tree. I have not the least doubt, that if this species of the lime-tree were introduced, and attention paid to them, that honey equally excellent and valuable might be produced in this country. The mead made from this honey is excellent; it is sold at Kowno, Grodno, and Vilna, at the rate of eight pounds sterling the dozen.

The next class of honey, which is inferior in a great degree to the Lipiec, being only for the common mead, is that of the pine forests; the inhabitants of which make apertures in the pine-trees similar to those near Kowno, and pay the same attention, in regard to the security of the bees, and their maintenance. The wax is also much inferior in quality; it requires more trouble in the bleaching, and is only made use of in the churches.

The third class of honey is the Stepowey, or the honey from the plains where there is an abundance of perennial plants, and hardly any wood. The province of Ukraine produces the very best, and also the very best wax. In that province the peasants pay particular attention to this branch of economy, as it is the only resource they have to enable them to defray the taxes levied in Russia; and they consider the produce of bees equal to ready money; wheat, and other species of corn, being so very fluctuating in price, some years it being of so little value, that it is not worth the peasant's trouble to gather it in: this has happened in the Ukraine four times in twelve years: but honey and wax having always a great demand all over Europe, and even Turkey, some of the peasants have from four to five hundred Ule, or logs of wood in their bee-gardens, which are called Pasieka, or bee-hives; these logs are about six feet high, commonly of birch wood (the bees prefer the birch to any other wood) hollowed out in the middle for about five feet; several lamina of thin boards are nailed before the aperture, and but a small hole left in the middle of one of them for the entrance of the bees. As the bees are often capricious at the beginning of their work, frequently commencing it at the front rather than the back, the peasants cover the aperture with a number of these thin boards, instead of one entire board, for fear of disturbing them, should they have begun their work at the front. It may appear extraordinary, but it is nevertheless true, that in some favourable seasons, this aperture of five feet in length, and a foot wide, is full before August; and the peasants are obliged to take the produce long before the usual time, with the view of giving room to the bees to continue their work, so favourable is the harvest some summers.

The bee-gardens are chosen in the plains where the perennial plants are most abundant, that the bee may have but little way to carry home the produce of her labour; they are of a circular form, about 150 yards in diameter, enclosed with a fence of reeds, or brush-wood, and a thatching over them of about five feet for protection, and to keep out the rain and snow: this is supported by poles from the inside, and a bank of earth is also thrown up, to keep out the snow from penetrating in the winter. In the middle a few fruit-trees are planted to break the wind, as also hawthorns, and other underwood, round the enclosure, with the same view. The hives are planted under cover, in the inside, round the fence; and in the winter they are well secured with straw from the frost. The plants for which the bees have a preference, are the Thymus serpyllum, Hyssopus officinalis, Cerinthe maculata, and the Pollygonum fagopyrum.

The process of brewing mead in Poland is very simple: the proportion is three parts of water to one of honey, and 50 lib. of mild hops to 160 gallons, which is called a Waar, or a brewing. When the water is boiling, both the honey and hops are thrown into it, and it is kept stirring until it becomes milk warm; it is then put into a large cask, and allowed to ferment for a few days; it is then drawn off into another cask, wherein there has been aqua-vita or whisky, bunged quite close, and afterwards taken to the cellar, which in this country are excellent and cool. This mead becomes good in three years time; and by keeping, it improves like many sorts of wine. The mead for immediate drink is made from malt, hops, and honey, in the same proportion, and undergoes a similar process. In Hungary it is usual to put ginger in mead. There are other sorts of mead in Poland, as Wisniak, Dereniak, Maliniak; they are made of honey, wild cherries, berries of the Cornus mascula, and raspberries; they all undergo the same process, and are most excellent and wholesome after a few years keeping. I never saw a gouty man in those provinces where mead is in common use. The Lipiec is made in the same way; but it contains the honey and pure water only. The honey gathered by the bees from the Azalea pontica, at Oczakow, and in Potesia in Poland, is of an intoxicating nature; it produces nausea, and is used only for medical purposes, chiefly in rheumatism, scrophula, and eruption of the skin, in which complaints it has been attended with great success. In a disease among the hogs called Wengry (a sort of plague among these animals), a decoction of the leaves and buds of this plant is given, with the greatest effect, and produces almost instantaneous relief. This disease attacks the hogs with a swelling of their throat, and terminates in large hard knots, not unlike the plague, on which the decoction acts as a digestive, abates the fever directly in the first stage, and suppurates the knots. It is used in Turkey, I understand, with the same view (the plague). Tournefort makes mention, in his travels, of this honey.

I have the honour to be, &c.

END OF VOL. I.

D. Willison, Printer, Edinburgh.